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THE CONNECTED ENTERPRISE

MARCH 25, 2013

PROGRESS REPORT

Building the virtual data center

[illegible] management, [illegible] and [illegible] infrastructure [illegible] the challenges of the [illegible] data center. [illegible] ▶

Networkworld.com

HP Converged Infrastructure and the Cloud

The essential foundation for any cloud deployment

Duncan Campbell
VP OF MARKETING, HP CONVERGED INFRASTRUCTURE
HEWLETT-PACKARD COMPANY

Duncan Campbell is the leader of the Enterprise Group Solutions Marketing team. In this role, Campbell is responsible for the Marketing Strategy and the Solutions content development for: HP Converged Infrastructure, Application Transformation, Information Optimization, Security and Risk Management, Mobility and SMB. Campbell brings more than 25 years of enterprise and midmarket marketing experience to this leadership team.

Duncan Campbell, vice president of worldwide marketing for converged infrastructure at HP Enterprise Group, shares with Computerworld his insights on the HP Converged Infrastructure.

IT increasingly views the cloud as a strategic business enabler. How is HP helping IT departments reach their cloud goals more safely, quickly, and easily?

To truly deliver on the "services anywhere" promise, organizations must think differently about IT. Successful organizations create the right mix of on- and off-premise services by leveraging the best of traditional IT, private, managed, and public cloud for a seamless infrastructure experience.

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HP fully understands this. That's why earlier this year we introduced the HP Converged Cloud approach and portfolio, which delivers solutions based on a single common architecture and open-standards approach. It gives customers choice, consistency, and confidence across infrastructure, applications, and information.

What is the relationship between the Converged Infrastructure and the Cloud?

The HP Converged Infrastructure helps IT enable business success by accelerating the time-to-value of applications and services. This can only be achieved with an infrastructure or data center that is simpler, more flexible, more efficient, and less expensive to operate. The infrastructure also needs to be cloud-ready.

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Why is a Converged Infrastructure critical for IT and the business?

Organizations need the best infrastructure possible to compete and grow in today's fast-paced, mobile business world. But aging infrastructures and facilities are limiting business agility and draining IT budgets.

Most customers tell me the same story: Their IT infrastructure is too complex, too costly to operate, and too slow to respond to business needs. What I hear is supported by research findings. Organizations now spend upwards of 70 percent of their IT resources on operations and activities that keep the lights on, as it were, when what they should be spending it on is innovation.

What differentiates the HP Converged Infrastructure and cloud approach?

There are three huge differentiators.

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*IDC white paper sponsored by HP, *Measuring the Business Value of Converged Infrastructure in the Data Center*, October 2011

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inside

MARCH 25, 2013

8 Bits Comments, Blogs and Online

10 Trend Analysis
Cisco's network security future appears unclear.
BY ELLEN MESSMER

12 Trend Analysis
Security of open-source software scrutinized.
BY ELLEN MESSMER

14 Trend Analysis
Contact centers could benefit from WebRTC.
BY TIM GREENE

16 Tool Shed
Gearhead
Presentations and pointing with lasers.
BY MARK GIBBS

23 Cool Tools
Wireless audio enhances two new gadgets.
BY KEITH SHAW

24 Trend Analysis
U.S. Army goes virtual with OpenSim.
BY MARIA KOROLOV

28 Tech Debate
Is the cloud ready for mission-critical apps?
BY ALEXANDER PASIK AND SANJIB SAHOO

30 Cover Story
Building the virtual data center.
BY BRANDON BUTLER

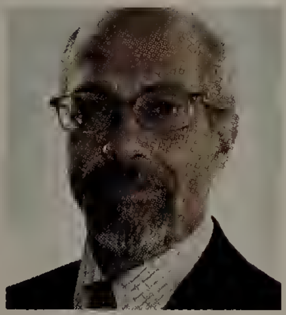
38 Backspin
Fixing process exceptions. And music on hold.
BY MARK GIBBS

38 Net Buzz
Cautionary tale from a Twitter 'share-cropper.'
BY PAUL MCNAMARA

FROM THE EDITOR | JOHN DIX

Lessons from the field

Despite all the talk about the economic recovery, the IT purse strings are still pretty tight, at least based on an informal poll of practitioners at the recent *Network World* IT Roadmap conference in Chicago.



Noting that the currently thriving stock market indicates broad belief in the strength of the economy, I asked the group of 450 if their 2013 budgets reflected as much confidence. With a show of hands, about 10% indicated their budgets are up this year, 70% said they are flat with last year, and 20% are wrestling with providing more with less.

That proved to be an interesting foil for event keynote speaker Barry Libenson, CIO of $14 billion Land O'Lakes, who says his 2013 budget is up 12% this year. "I tell the CFO that he should want my budget to go up," Libenson says, "because every dollar I spend drives revenue up some multiple of that."

That isn't to say IT is easy, says Libenson, who has a degree in computer science. "When I graduated you could know all of the technology. Today, the pace of change is staggering."

Examples? Half of the company's app development work today is focused on mobile, which has quickly eclipsed the desktop. And two years ago Land O'Lakes had one app in the cloud. Today, 40% of the company's apps are cloud-based. "We're looking at cloud for every app as a way to increase efficiencies and reduce capex," Libenson says.

The greatest challenge with embracing cloud computing is finding the talent needed to glue together all the on-premises and cloud-based resources. It's hard to find the SOA engineers and middleware specialists, he says.

Constant change also makes long-range planning interesting. "We used to be able to do three- to five-year plans that were relatively accurate," he says. "Today, we still have a five-year plan, but we know it will change because of the pace of tech change."

How does IT move forward given this challenging environment? Libenson says the key to success is partnering with business stakeholders, key suppliers (he even speaks at their conferences), peers and trusted advisers/consultants. "We also focus on being nimble and adaptable, and an enabler, not a cost."

Looking out over the next five years, Libenson offered some of his core predictions: Mobile technology beyond 4G will continue to drive app innovation; use of purpose-built, specialized hardware — what he calls engineered hardware, like Oracle's Exadata Database Machine — will become more important in the data center; unstructured data will drive an increasing percentage of IT spend; and the unknown is a huge factor that will only get bigger.

Hard to argue with success.

John A. Dix

peersay

Better-than-physical security

SECURITY FOR THE cloud seems to be reaching an inflection point, where providers and customers realize they have a different (and more powerful) toolkit to enforce security policy than they traditionally did (Re: "Cloud providers become cloud security providers"; tinyurl.com/ct8d5em).

Part of the reason for the perception of the cloud as insecure is that traditional security policy is still rooted in physical constructs, which makes no sense in a cloud infrastructure. But now providers can add advanced security capabilities to their offerings and make it available to their customers as consumable services, which can lead to a better-than-physical security posture on their cloud deployments.

Encrypt Everything

Surface Pro: Cooler heads prevail

IT'S ABOUT TIME for an article like this. I really wish people could see past all of the terrible "reviews" out there, but the truth is that most people just see the headlines and create a generalized opinion (Re: "Surface Pro is making people crazy"; tinyurl.com/cgsztvy).

A review should review the device, not what the device isn't. It's like writing a review on a 13-inch laptop and docking it points because it's not a 15.6-inch laptop. The Surface Pro is an unbelievable device.

tech100

Useful and relevant abstractions are **what SDN strategies should be all about.**

Apple's marketing strategy flaw

APPLE IS MARKETING too many products for one ultimate device in need; that is, the right-size smartphone, larger than the iPhone 5 but smaller than the iPad mini (Re: "iPad sales collapse? iPad mini leads to changes in buying behavior"; tinyurl.com/cwmkq7g).

The desire to sell as many devices as possible has slowed down the market penetration and allowed makers like Samsung to open doors by making the right-size smartphone. A 5-inch phone would be nice, Apple. Now, not 2014 ...

John Dunn

What SDN strategies should entail

SDN BEING REAL or not before 2014 is not dependent on the bigger vendors being done retrofitting SDN into their existing products. SDN is a methodology, and shipping networking products that are built from scratch using that methodology are already here (Re: "Is the world ready for the intersection of software-defined networking and network security?" tinyurl.com/c8mvcqo).

Useful and relevant abstractions are what SDN strategies should be all about — "relevant" being relevancy for both networking and higher-layer (application) policies, and "useful" being sufficiently devoid of implementation details for it to be an abstraction instead of a CLI-in-an-API. With this, applied top-down rather than bottom-up, you can see where security becomes a natural fit: knowing in the abstract who should be permitted to talk to who becomes useful in both enforcing infrastructure as well as security policies.

Nils_Swart

DOESN'T SDN PROMISE to solve some of these very same problems by abstracting the whole network from the underlying infrastructure and allowing the solutions that Cisco is suggesting to be accessed via a programming interface? (Re: "Software-defined networking is a 'limiting vision,' says Cisco CTO"; tinyurl.com/b2e9cnw).

It sounds like Cisco just wants to make sure that interface is *its* interface, and not some other open standard.

VirtualizedGeek

Genus 'unixosia'

YOU'VE RAISED AN excellent point regarding the shared ancestry of iOS and Android. It might be helpful to assign taxonomic names to highlight this fact: unixosia appleiosia vs. unixosia androidosus (Re: "Apple's Schiller criticizes Android: The pot calls the kettle black"; tinyurl.com/cknc7tw).

Perhaps a taxonomic approach in other areas — databases, Web browsers, programming languages — could highlight shared or different lineages in them, too.

PC_Backup

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bits

Cisco effort to bolster lock, instead weakens it

THE PASSWORD ENCRYPTION algorithm used in some recent versions of the Cisco IOS operating system is weaker than the algorithm it was designed to replace, Cisco revealed last week. The new algorithm, called Type 4, was supposed to increase the resiliency of encrypted passwords against brute-force attacks. However, due to an implementation error, the new algorithm generates password hashes — cryptographic representations of passwords — that are weaker than those generated by the existing Type 5 algorithm. The issue was discovered by researchers Philipp Schmidt and Jens Steube of the Hashcat Project, a password recovery application. "Fortunately, the type 4 implementation was not yet present on all hardware devices and all IOS (XE) versions. Nevertheless, such an 'implementation mistake,' as Cisco calls it, should have never happened and the code should have never left the Cisco lab," said Schmidt and Steube, who describe the issue as a "disastrous error." ***tinyurl.com/brkn3vk***

AT&T hacker gets maximum sentence

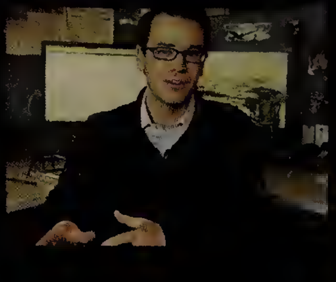
A FEDERAL judge ignored convicted hacker Andrew Auernheimer's leniency plea in sentencing him to 41 months in prison for illegally accessing email addresses and other data belonging to more than 120,000 iPad subscribers using AT&T's networks. U.S. District Judge Susan Wigenton of the District Court in New Jersey also sentenced Auernheimer to an additional three years of supervised release and ordered him to pay AT&T more than $73,000 in restitution for damages stemming from his actions. The sentence is the maximum that federal prosecutors had sought against Auernheimer, who made headlines in June 2010 when he and his partner, Daniel Spitler, used an automated script to extract email addresses and SIM card ID numbers of iPad owners from AT&T's servers. The duo claimed they carried out the exercise only to demonstrate how AT&T was leaking the data via its Web site. ***tinyurl.com/d7t87pe***

C-notes for apps

MICROSOFT KICKED off a promotion that rewards Windows 8 and Windows Phone developers $100 for each app they publish in the company's app stores. Dubbed "Keep the Cash," the promotion is Microsoft's first overt cash-for-apps program, a tactic rivals Google and Apple have never needed to try. To one analyst, the $100 pitch is an ill omen. "It looks a little desperate," says Patrick Moorhead, principal analyst with Moor Insights & Strategy. "It sends the message that Microsoft is having a hard time building out its app categories." The promotion is intended to deliver quantity, not necessarily quality, says Ezra Gottheil of Technology Business Research. "It seems they want to try to pull in the 13-year-olds, because $100 is not at all meaningful to an established developer," Gottheil says. "Maybe they're looking for the next generation of kid geniuses, and hoping to find the next killer app that comes out of nowhere." ***tinyurl.com/dy66mrs***

Amazon CEO's deep sea recovery

A GROUP led by Amazon's CEO has recovered from deep in the Atlantic Ocean rocket engines that powered the NASA Apollo moon missions in the 1960s and 1970s. Jeff Bezos said his group 'Bezos Expeditions' used remote submarines working at depths of over 14,000 feet to bring parts of two Apollo F-1 engines to the surface. The submarines were connected to a large recovery vessel by miles of fiber optic and electric power cables so they could be controlled by pilots at the surface. NASA, which provided assistance to the effort, congratulated Bezos on the success of the mission. "We look forward to the restoration



IT VIDEO

Migrating RSS feeds from Google Reader

Nick Barber offers tips and suggestions on how to take your RSS feeds from Google Reader to another service, as Reader is shutting down on July 1. ***tinyurl.com/cheax6c*** of these engines by the Bezos team and applaud Jeff's desire to make these historic artifacts available for public display," said NASA Administrator Charles Bolden. ***tinyurl.com/cb4rccp***

Cisco ties WebEx to telepresence

IT'S NOW possible to patch browser-based WebEx users into Cisco telepresence conferences as full participants, Cisco announced last week. The conferences can be scheduled in Outlook using a Cisco plug-in, and participants can be sent email invitations that include a WebEx link. Content sharing is automatic to all participants. Cisco also announced a software upgrade to its telepresence server and Cisco TelePresence Conductor that enables devices that don't require a full 1080p HD port to share a port with other devices — which can mean up to 70% greater efficiency in utilization, Cisco says. ***tinyurl.com/bom9bsu***

HP board survives confidence vote, but only barely

HP'S SHAREHOLDERS have voted to reelect its entire board of directors, despite opposition from investors who want some members held accountable for recent troubles, including the ill-fated acquisition of Autonomy. The two directors seen as most vulnerable, G. Kennedy Thompson and John Hammergren, narrowly survived with 55.15% and 53.91% approvals, respectively. CEO Meg Whitman received greater than 90% approval. The meeting went off with no real fireworks, although several investors mourned what they see as the loss of the "HP Way," a set of principles established in HP's early days that placed a high value on innovation and employees. Whitman reiterated her plans for getting HP back on track, which include building solid products, improving customer satisfaction, expanding sales and energizing HP's channel partners. "Despite what you might have heard, innovation is alive and well," Whitman says. ***tinyurl.com/bqq29vu***

DHS shifting to cloud, agile development to boost homeland security

THE U.S. Department of Homeland Security (DHS) has moved to agile development and is shifting to cloud platforms in an effort to improve IT operations. At a hearing before the House Committee on Homeland Security, Margaret Graves, DHS deputy CIO, said the DHS is consolidating 42 data centers into two, and has consolidated 18 data centers so far. As part of this effort, it is adopting cloud services (platform-as-a-service and software-as-a-service), including moving its email system to a cloud platform. The intent of the hearing was to look at the progress of some of the department's IT projects. Approximately 15% of the department's budget, or about $6 billion, is spent on IT. ***tinyurl.com/c2fnghz***

What gender gap?

good

THE FIELD of IT is notorious for being persistently male-dominated, but that doesn't mean women still suffer from a gender gap when it comes to pay. In fact, the compensation gender gap has disappeared for tech workers, according to the latest salary survey from IT careers site Dice. Specifically, ever since 2009, average salaries have been equivalent for male and female tech professionals, the company reported last week — as long as you're comparing equal levels of experience and education and parallel job titles. (VIA PC WORLD)

Sure, blame the hackers...

bad

CUSTOMERS OF JPMorgan Chase last week reported seeing zero balances in their accounts both online and on mobile, and speculated that the bank's systems had been hacked. The bank however clarified that it was having a technology problem regarding customers' balance information that it was working to resolve. "It has nothing to do with the cyber threats - it's an internal issue. We are very sorry to our customers for the inconvenience," the bank said in a statement.

Beware second-hand cellphone use

ugly

THOSE JUICY tidbits gleaned from one-side cellphone conversations you happen to overhear are even more distracting than those juicy tidbits gleaned from accidentally overhearing conversations between two nearby people, according to University of San Diego researchers. While on the surface this might seem like a frivolous piece of research, consider that such distractions could impact anyone from a bus driver to an office worker handling sensitive information. Lead researcher Veronica Galvan says, "This is the first study to use a realistic situation to show that overhearing a cell phone conversation is a uniquely intrusive and memorable event. We were interested in studying this topic since cell phone conversations are so pervasive and could impact bystanders to those conversations at work and in other settings of everyday life."

Cisco's network security future appears unclear

BY ELLEN MESSMER

DESPITE ITS leadership position in most enterprise security product areas, Cisco faces a number of technological and competitive challenges to stay out in front.

For example, the overarching security plan Cisco outlined two years ago known as SecureX remains very much a work in progress. The basic idea behind SecureX is to give customers a broad view of what computer and mobile device users are doing on the network.

The SecureX architecture has been called over-complicated and perhaps too dependent on having a Cisco-based infrastructure, but the basic idea is that by collecting real-time information about the individual's network usage and applications, device make, location and other variables, appropriate security policies can be established for network authorization.

Support for SecureX has come first in the Cisco ASA CX Context-Aware Security Next-Generation Firewall. Dave Frampton, a vice president at Cisco, says it's now on to "the next phase of SecureX," which will be the "routing and switching infrastructure," though he offers no specific time frame for completion.

Frampton emphasizes that "SecureX conveys our entire approach to security." He says about 3,000 Cisco customers have adopted SecureX security components, which include the older Cisco Identity Services Engine and TrustSec tagging methodology. He says tens of thousands more are indicating a high level of interest in SecureX.

Beyond SecureX, Cisco faces other challenges from analysts and enterprise IT security managers alike.

Gartner has been critical of Cisco, especially in terms of its firewalls. For example, Gartner says that so-called next-generation firewalls (NGFW) that are application-aware rather than simply port-based are the direction that firewalls should be going. So while lavishing praise on other Cisco competitors — Palo Alto Networks for its NGFW and Check Point Software Technologies for its array of firewalls and their management for complex environments — Gartner's report calls Cisco merely a "challenger."

While giving Cisco kudos for having a good support network and reputation analysis capabilities for its firewall customers, Gartner indicates that Cisco does not seem to be displacing Palo Alto or Check Point on "vision or feature" and Cisco "does not effectively compete in the NGFW field that is visible to Gartner."

According to Cisco spokesman David Oro, "Cisco customers would say differently." He notes that the Cisco ASA CX firewall only shipped last July. He says Cisco considers Gartner's research in this case "outdated."

But Gartner says it sees Cisco winning most procurements through sales/channel execution or "aggressive discounting for large Cisco networks where firewall features are not highly weighted evaluation criteria (that is, as part of a solution sell in which security is one component)."

Gartner also notes that its clients often find Cisco's security strategy, nomenclature and product descriptions "confusing."

Terms like "SecureX" and Cisco's marketing campaign "Internet of Everything," referring to how many devices are coming online, are confusing, says Erik Devine, information security manager at Riverside HealthCare, in Kankakee, Ill. Devine says he has huge respect for Cisco as a network provider but simply "doesn't believe they're a strong security firm." He says that, like Juniper, Cisco should "stick to switching and routing."

ERIK DEVINE, information security manager at Riverside Healthcare, says he has huge respect for Cisco as a network provider but simply **"doesn't believe they're a strong security firm."**

Devine chose to migrate away from what was a Cisco-based network to an HP-based one, in part because licensing proved more attractive. In the course of that change, Riverside also moved away from Cisco-based ASA firewall modules to a variety of Fortinet firewall, SSL/VPN, encryption and messaging protection gateways that include wireless control for the core network.

Though he did look at Palo Alto and Cisco gear as part of the evaluation process, Devine felt the Fortinet firewalls had sufficient application-level control for what the healthcare organization needed and were technically sound and cost-effective. Devine says he's found Cisco's licensing models to be overly complicated and expensive.

Palo Alto, which Gartner considers the front-runner firewall maker technically in application-aware capability (though a bit pricey), says Cisco is a worthy competitor.

"They are an impressive company. They have tremendous presence in the customer base," says Chris King, director of product marketing at Palo Alto, adding Cisco seems to have something akin to "absolute dominance" in the networking organization and remarkable sway with networking managers, who may have budgets for firewalling security, too. (Cisco doesn't disclose what portion of its firewall sales come from blades in switches and routers or as stand-alone firewall appliances.)

Because Cisco and Juniper alike stress that security should be part of the networking infrastructure, the challenge for a firm such as Palo Alto is to get potential enterprise customers to understand the advantage of application-aware controls. King argues Cisco firewalls are simply stateful inspection with some application controls, and Palo Alto has to win acceptance by proving its NGFW functionality is worth it. According to its latest SEC filing, Palo Alto had 6,000 end-user customers at the start of last year and about 11,000 today.

"Cisco is No. 1 in network security, No. 2 in Web security and No. 3 in messaging security," notes IDC analyst Charles Kolodgy. According to IDC, Cisco's IT security revenue bounced back to $1.834 billion by the end of 2012 after sinking the year before to $1.735 billion, and Cisco's fiscal statement last month indicates continuing modest growth in its sales of its IT security products and services, which include firewalls, intrusion-prevention systems, IronPort secure Web gateway and cloud-based ScanSafe service.

Cisco hasn't won every match. Cisco edged away from its own denial-of-service mitigation technology, Anomaly Guard and Anomaly Detector Modules, announcing "end of sale" in 2010. Just this month, Cisco announced an alliance with Arbor Networks — they had teamed together in the past — that involves embedding Arbor anti-DDoS technology directly in Cisco routers.

And acquisitions remain a way to gain technologies that are seen as important for the future. For example, Cisco just acquired Cognitive Security for its behavior-based threat analysis. Cisco's Frampton says this will play a role in identifying threats, especially targeted mobile devices. ■

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Security of open-source software scrutinized

BY ELLEN MESSMER

A RECENT round of flaws discovered in open-source software has reignited concerns that security is getting bypassed in the rush to continue expanding the large and extremely popular code base used by millions.

For instance, although the Java-based Spring Framework was criticized by security researchers in January as having a major flaw that allowed remote-code execution by attackers against applications built with it, the updates to Spring last week don't address this security problem.

"Unfortunately, this is the way a lot of open source vulnerabilities go," said Jeff Williams, CEO at Aspect Security, which pointed out two months ago that the "expression-language" feature in Spring should be disabled until the issue related to potential remote code execution is remediated. Spring Framework is managed under SpringSource, a division of VMware.

"They are busy with actual functional stuff and so their incentives are always to minimize the importance of security issues," Williams said.

However, other researchers counter that the focus on security varies considerably across free or open-source software communities and many of them, in fact, do a good job in addressing security issues.

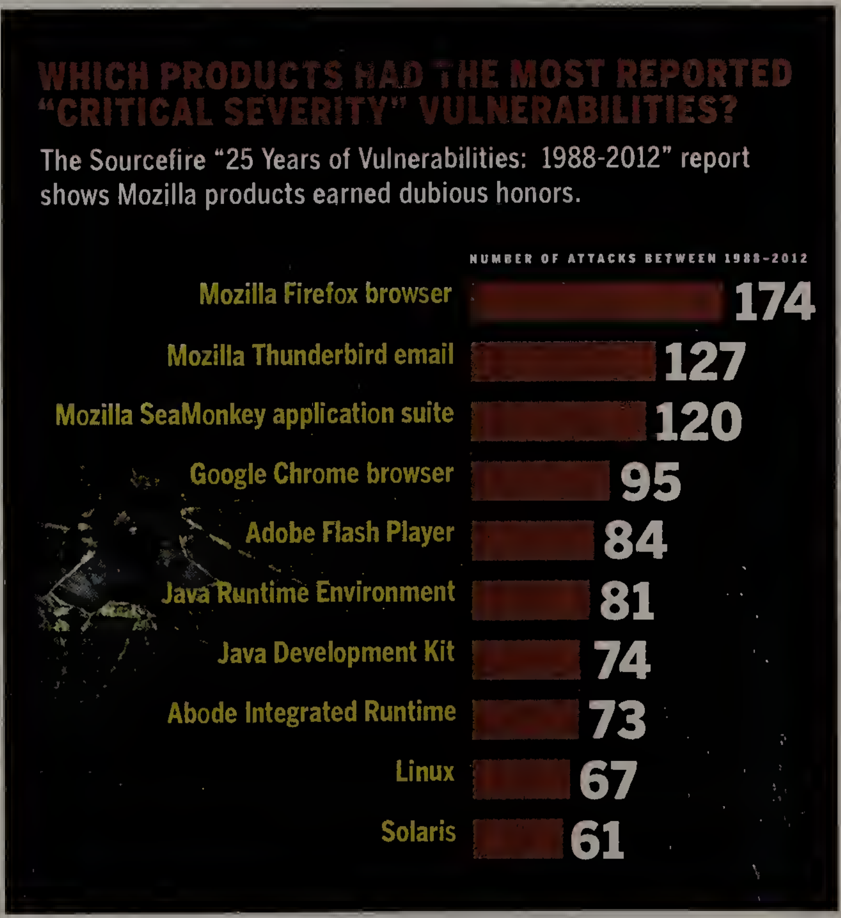
"It's handled very different between open-source projects," says Vincent Berg, researcher at security firm IOActive. "There are projects that have a very active approach to it. The big Linux distributions and the different BSD flavors tend to do a pretty good job." The Ruby on Rails Web application software project also recently moved quickly to make needed updates for security purposes, Berg says.

He says his impression is that better handling of security issues in open source seems to come from those that provide users with mailing lists about security which users are advised to subscribe to, and "most of these distributions have dedicated security contacts."

Berg says projects like Debian and most other big Linux distributions and FreeBSD seem to usually report bugs that are reported to them to "upstream package maintainers."

"Say someone reports a bug in Firefox not to the Firefox people but to the Debian people then the Debian people will handle it as their first point of contact but they will loop in the Firefox folks to determine a joint approach," Berg says.

"A project like Firefox uses their standard bugzilla bugtracker and I've got personal experience with reporting security bugs to them," he says. "They tend to be really fast in responding to a bug report [security bugs will be marked private as default so that only the reporter and the security team can view it]" before delivering the bug fix.


WHICH PRODUCTS HAD THE MOST REPORTED "CRITICAL SEVERITY" VULNERABILITIES?

The Sourcefire "25 Years of Vulnerabilities: 1988-2012" report shows Mozilla products earned dubious honors.

There have been plenty of serious security issues with Firefox products over the years, according to the recent study entitled "25 Years of Vulnerabilities" done by security firm Sourcefire, which analyzed both open-source and proprietary vulnerabilities reported to two public databases. The Mozilla Firefox browser stood out as having the largest number of high-severity vulnerabilities.

Firefox had 433 vulnerabilities rated high severity and critical based on the Common Vulnerabilities and Exposures (CVE) database and the second source, the National Vulnerability Database from the National Institute of Standards and Technology. High-severity vulnerabilities mean attackers can potentially fully compromise the user's machine. And in general, three Mozilla products earned the dubious distinction of making the Sourcefire report's list for "Top 10 Products with Critical Severity Vulnerabilities."

The Sourcefire report also indicated that in comparing Linux to Windows or the Mac OS in terms of products, Linux scores at 1,752 vulnerabilities in comparison to 1,114 for Windows and 827 for the Mac OS versions.

As with proprietary software, there are plenty of serious vulnerabilities to be discovered. In open source, according to researchers, the bigger problem is a widespread use of flawed open-source code. And some say it's often way too hard to even find out what the security issues are.

Ryan Berg, chief security officer at Sonatype, says it's not just serious problems like the severity of the Spring Framework "expression-language" flaw that are of deep concern.

"To me, the bigger issue is it's extremely difficult to ascertain the security of open-source components," he says. "We're seeing an unprecedented amount of usage of flawed open-source software."

Sonatype is a company that provides component life-cycle management products, and it also operates the Central Repository for open-source components. It houses more than 400,000 components, serving up more than 5 billion requests per year for 60,000 organizations.

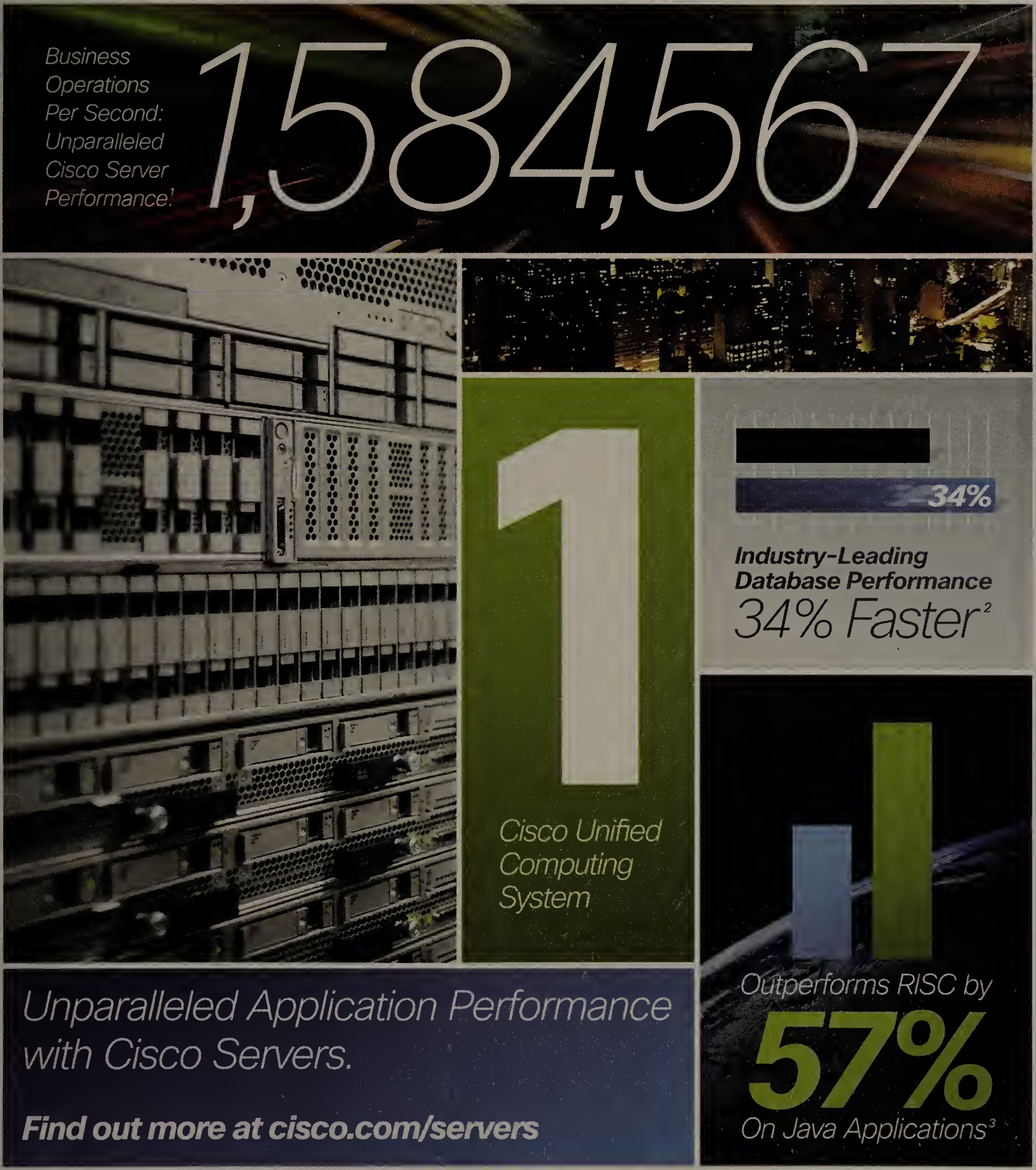
The open-source community needs to make it simpler and more transparent to report issues and publish findings about security in a way that's more discernible, says Sonatype's Berg.

"We get the CVE feeds, but there are unreported issues," he says, noting that the dark side is that vulnerabilities are being discovered but remain generally unknown. But the demand for open source is so strong that developers just keep downloading it, and it's become a vital part of enterprise code development and commercial products as well.

Downloading flawed open-source code brings with it "issues from a legal perspective," says Rami Sass, CEO of WhiteSource Software, a company that offers open-source life-cycle management software.

While the emphasis at WhiteSource is primarily on tracking open-source libraries and

▶ **Open source,** *see page 14*



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1. Based on SPECjbb2005 benchmark on Cisco UCS C220 M3 server at 1,584,567 BOPS, 792,284 BOPS/JVM. 2. Based on TPC Benchmark C Results on 2 Processor Systems. Cisco UCS C240 M3 High-Density Rack Server with Oracle Database 11g Release 2 Standard Edition One. 1,609,186.39 tpmC, $0.47/tpmC, available 9/27/12 compared to IBM Power 780 Server Model 9179-MHB with IBM DB2 9.5, 1,200,011.00 tpmC, $0.69/tpmC, available 10/13/10. 3. Based on SPECjEnterprise2010 benchmark with 8 total Java EE Server processors on Cisco UCS B440 M2 servers at 26,118.67 EjOPS compared to RISC-based IBM Power 780 at 16,646.34 EjOPS. SPEC®, SPECjbb®, and SPECjEnterprise® are registered trademarks of Standard Performance Evaluation Corporation. TPC Benchmark C® is a trademark of the Transaction Performance Processing Council (TPC). The performance results described here are derived from detailed benchmark results available at http://www.spec.org and http://www.tpc.org as of 1-15-2013. ©2013 Cisco and/or its affiliates. All rights reserved. All third-party products belong to the companies that own them. Cisco, the Cisco logo, and Cisco UCS are trademarks or registered trademarks of Cisco. Intel, the Intel logo, Xeon and Xeon Inside are trademarks or registered trademarks of Intel Corporation in the U.S. and/or other countries. All other trademarks are the property of their respective owners.

Contact centers could benefit from WebRTC

BY TIM GREENE

ORLANDO — Businesses need to study up now on WebRTC — the browser-based voice and video support included in the latest versions of Firefox and Chrome but that seems destined for all browsers — if they want to jump on opportunities to enhance services and cut costs, according to experts at last week's Enterprise Connect conference.

The application for which WebRTC (RTC stands for Real-Time Communication) offers the most potential is contact centers, where customers seeking help on Web sites can connect with live help via voice and video but also share screens.

For example, in a private demo room at the conference Avaya showed the technology working in conjunction with its Contact Center platform, something that is not a product yet. With no other client than a WebRTC-enabled Chrome browser a client PC clicked on a Web page button to initiate a video connection with an agent machine through the Contact Center server.

The broader potential is that through WebRTC's API, developers can readily incorporate video-chat in applications without worrying about compatibility of codecs because the codecs are built into the browsers. WebRTC has the intelligence to determine the type of traffic it is passing and select the codec that will optimize it given the network performance.

"This will move voice and video from being applications; [they become] more of a feature," says Jan Liden, a senior product manager at Google who is working on the WebRTC standard.

Over the next year businesses will see applications enabled with WebRTC, and they should explore how the technology might be useful to them. "Think out-of-the-box about real-time data and video to improve business processes," says Cullen Jennings, a Cisco Distinguished Engineer also working on the standard. "Think about how it works over existing networks. Slap vendors around to get them to build what you need."

Expect applications written by third-party developers that incorporate WebRTC to proliferate over the next three to six months, says Valentine Matula, senior director of Avaya's multimedia technologies research. Mainstream application developers will follow quickly, he says.

With communications built into browsers and apps businesses have the chance to cut voice call, audio conferencing and videoconferencing costs by reducing service fees such as 800 calls to service centers.

So far Apple and Microsoft haven't incorporated WebRTC in Internet Explorer or Safari. Microsoft's Derek Burney, a corporate vice president, said doing so is part of the company's game plan when a standard has been finalized.

Microsoft's Skype also provides voice, video and data over the Internet, but requires a separate client that is proprietary, resulting in an island of connectivity among Skype users. WebRTC has the potential to federate this type of communication or to enable each user to connect to multiple islands that are useful to them.

A goal of WebRTC is to enable voice, video and file sharing between browsers without plug-ins, but in the short-term they may become necessary. Near ubiquity is a requirement of maximizing the usefulness of WebRTC, but if Internet Explorer doesn't support it that creates a serious problem. By most estimates IE is at least a strong second among browsers.

As a result, plug-ins may arise that serve the purpose until Microsoft bakes WebRTC into its browser, experts say.

Mobile browsers that support WebRTC are also in the works. Linden says Google focused first on WebRTC in desktop Chrome browsers and that putting it in its mobile browser is "the obvious next step. Mobile is harder."

The technology today is best-effort, but there are provisions to mark traffic for service quality, but there is no guarantee that the network will respect those marks, Jennings says.

If WebRTC were used over a corporate network controlled by the company, this problem could be dealt with. "The fear is what happens when applications enable click-to-call that go outside the infrastructure," says Irwin Lazar, an analyst with Nemertes Research..

Jennings says standards developers are working on including tools in WebRTC that will provide data about how it is performing so existing voice-quality management platforms or individual applications that integrate WebRTC can troubleshoot connections.

The technology has issues that need to be solved. Despite policies to the contrary, it is likely workers will use applications that leverage WebRTC while they are connected to the corporate network, Lazar says, just as they use Dropbox today. "I don't see how you can stop it," he says. ■

▶ **Open source,** *from page 12*

legal issues. Sass says "there's a special exposure" that comes with open source because hackers can look at it to hook into vulnerabilities. He also notes that it's commonplace for companies to develop and sell commercial software using open-source libraries and many of those libraries become out of date but aren't monitored for that.

A common problem is that both vendors and enterprises, lose track of what they're even using in terms of open-source code, Sass says. But there's now a pushback among some businesses to press vendors to disclose their open-source usage. For example, "banks and insurance companies are already introducing clauses with vendors to provide them with a full list of open-source and the indemnification."

IOActive's Berg says his firm also sees its customers frequently taking up the open-source security question.

"The advice I tend to give IOActive's customers, where we deal with this issue regularly, is that before using any new external [free or open-source] component, the company has to do an extensive analysis of the component to answer some questions. What is the quality of the code? Does the project respond to upstream bugfixes and issues quickly? Do they have dedicated security contacts?"

Depending on the analysis in any given situation and the license the component was released under, the company anticipating use of open-source code may decide "to simply fork the software and maintain a separate fork internally," says IOActive's Berg. "This gives one the benefit of not having to disclose security issues to the upstream package authors."

This, however, may well be considered "bad form" by both companies and the open-source people working on the code because open-source communities prefer companies using open source to report back on serious issues that crop up, he adds. ■

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TOOLS

Presentations and pointing with lasers

Every now and then a company appears that makes a slew of cool products. The latest of these is Satechi, which should use the tag line "purveyors of fine gadgets." Satechi just sent me a few very cool items and in a couple of weeks I shall review their remarkable Wireless Mini Router/Repeater. Today, I have two of their presentation controllers, both of which include laser pointers.

Mark Gibbs' Gearhead

Allow me to digress because, speaking as we are of lasers, you have to check out the set of eight Hyperbolic Upgrade Stickers produced by Wondermark and sold for $12.50. These all look, at first glance, like real warning labels, and one of my favorites reads "WARNING / Lasers are Awesome." Gearhead rating? 5 out of 5, natch.

The first Satechi presentation gadget is the X-Pointer Mobile Presenter, a tiny, cylindrical laser pointer that plugs into the headphone port on an iPhone or iPad. To switch it on and off you need to install the free X-Presenter app. But wait, that's not all it does! When you install the companion host app (available for Windows and OS X), you can control presentation software such as Keynote or PowerPoint! And the X-Pointer comes with a stylus touch pen that the pointer fits inside of for storage.

The Satechi X-Pointer Mobile Presenter, priced at $39.99 (currently on sale for $29.99), is a handy tool to have in your pocket in case you suddenly need to do a presentation or point at things with a laser, and gets a Gearhead rating of 5 out of 5.

On the other hand, you could go a little more upmarket with Satechi's Bluetooth Smart Pointer and Remote Control, which is a laser pointer as well as a multimedia controller (it works with Keynote and PowerPoint and Apple TV 3) that also can remotely control an iOS camera and can activate Siri (so she can misunderstand you remotely).

Because the Satechi Bluetooth Smart Pointer and Remote Control supports Bluetooth 3.0 HID it will work with iPhone 5/4S/4/3GS, iPad Mini/3/2/1, iPod Touch 4G/3G, MacBook Pro/Air, iMac, Mac Mini, and all other Bluetooth-enabled Apple products and other Bluetooth-enabled computers.

The Smart Pointer has a switch on the side with positions for multimedia mode, accessibility mode and presentation mode, and the cover slides down to reveal numeric keys, a button to start Bluetooth pairing, a return key, and a key to show and hide the iOS keyboard.

Allow me to digress again, because I've recently noticed a trend among vendors of Bluetooth devices to make "pairing" as simple as possible. To that end many manufacturers now require only "0000" to be entered as the pairing security code or even nothing at all. Satechi, curiously, bucks this trend and pairing requires a eight-digit code (you enter it via the built-in keys and return key after the host computer displays the code).

This is a great presentation controller and it's one of a few that makes it easy to use an iPad for presentations. Priced at $59.99 (reduced to $44.99) the Satechi Bluetooth Smart Pointer and Remote Control gets a Gearhead score of 5 out of 5. ■

Gibbs is in Ventura, Calif. Your comments to gearhead@gibbs.com and follow him on Twitter and App.net (@quistuipater).

Satechi's X-Pointer Mobile Presenter turns your iPhone or iPad into a presentation controller.

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Six ways StruxureWare for Data Centers software improves operational and energy efficiency.

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Find stranded capacity and determine which devices can be decommissioned or used elsewhere.

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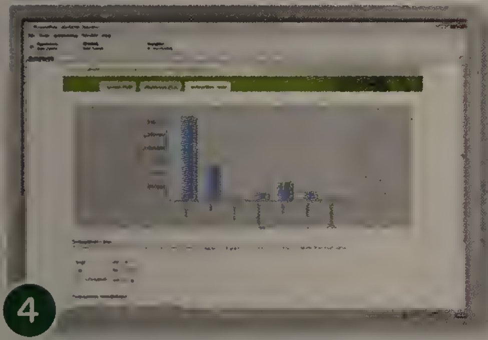

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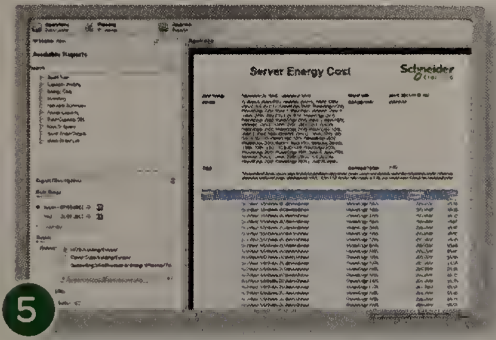

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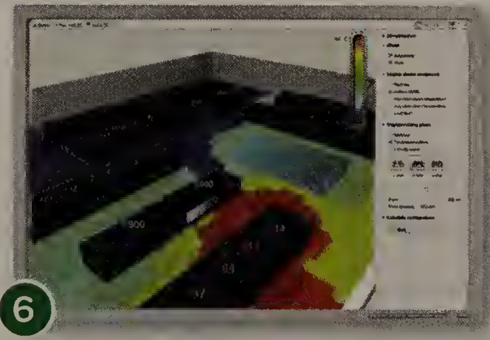
Provide energy use details that enable linking operating costs to each business unit user group for "charge-backs."



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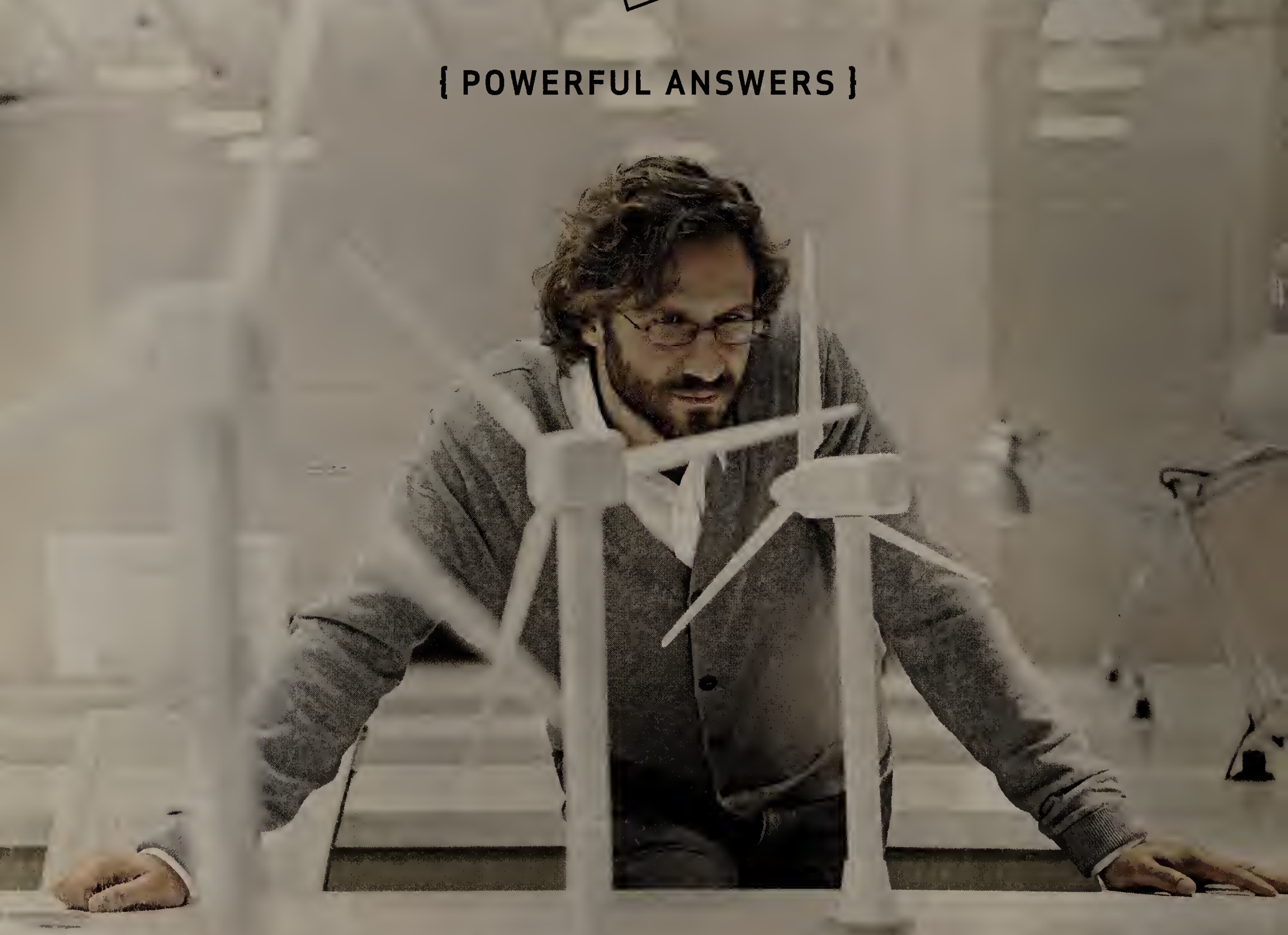
IF MAD SCIENTISTS

CAN ENDANGER THE WORLD,

NICE SCIENTISTS CAN SAVE IT.

{ POWERFUL ANSWERS }



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RISKS AND REWARDS

EMPLOYEE-OWNED DEVICES **IN THE WORKPLACE**

COMPANIES THAT EMBRACE MOBILE DEVICE CONSUMERIZATION WILL BE MORE COMPETITIVE IN THE BUSINESS ARENA.

IN 2016, 350 MILLION EMPLOYEES WILL USE SMARTPHONES. **200 MILLION OF THOSE WILL BRING THEIR OWN.**[1]

MOBILE IS THE NEW ***BUSINESS AS USUAL.***

Today's hyper-connected employees are changing the way business is done. Mobile devices have invaded the workplace, creating new security risks and compliance challenges as company data leaves the safety net behind the firewall and is shared across devices, in the cloud and via social networks. Yet companies that empower their employees with the freedom to work however, whenever and wherever they are most productive will position themselves to be more competitive in the business arena. The consumerization of mobile devices, coupled with ever-growing technology advancements, is driving businesses to rethink their mobile strategy.

THE CHALLENGE: how to reap the rewards while mitigating the risks.

81% OF EMPLOYEES USE AT LEAST ONE MOBILE DEVICE FOR BUSINESS USE.[2]

Done right, mobile initiatives deliver an excellent return on investment:

- Increase communication and collaboration.
- Boost employee productivity and increase customer responsiveness.
- Provide device, location and access flexibility to mobile workers.

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1 *Mobile Is the New Face of Engagement*, Forrester Research, Inc.

2 "The Latest Infographics: Mobile Business Statistics for 2012," *Forbes*, May 2, 2012.

TAKING THE ***FIRST STEP.***

Enterprise mobility is poised to fundamentally change the IT landscape. As companies prioritize and evolve their mobile strategies, envisioning new processes and adopting new communications platforms, no single issue is more critical than mitigating security risks, including:

- Providing authentication access via certificates
- Updating access policies remotely
- Managing user identities across multiple systems and applications
- Providing a centralized source of user identities
- Enabling secure and controlled access to corporate data through mobile applications

To meet these hurdles head on, IT departments need to re-evaluate their current mobile security policies and develop a comprehensive strategy to create a solid foundation for long-term mobile success.

ENTERPRISES ARE TURNING TO VERIZON TO PROVIDE SECURE MOBILITY SOLUTIONS FOR TODAY'S BIGGEST BUSINESS CHALLENGES.

INDUSTRY USE-CASE SCENARIOS

EMPLOYEE-OWNED DEVICE **solutions make it easier for businesses to manage employee- and corporate-liable devices, data and applications safely and effectively.**

MANUFACTURING

Challenge: To support thousands of disparate devices, apps, people and job functions, a large multinational company needed to develop a mobility roadmap that allowed employees to use their own devices while still keeping proprietary data secure. So they turned to Verizon for a beginning-to-end mobility strategy and security assessment that seamlessly established governance and policies.

Result: Developed stringent mobile security requirements enforced through cloud-based solutions, while expanding support for employee-owned devices—improving mobile productivity.

IDENTITY AND ACCESS MANAGEMENT (IAM) **solutions help identify vulnerabilities and risks, making it easier to manage identities and provide reliable corporate access to a mobile workforce.**

PHARMACEUTICAL

Challenge: When the Drug Enforcement Agency changed regulations to permit e-prescriptions, it opened the door for pharmacies to deliver medication to patients faster, but also created new obstacles due to stringent security and compliance regulations. An industry-leading pharmacy chain chose Verizon to develop an IAM solution that allows physicians to electronically create and transmit prescriptions, in real time, directly to pharmacies via mobile devices.

Result: Improved security, accuracy, speed and consistency of prescription fulfillment. Implemented a cloud-based authorization process that speeds up delivery to market and ensures compliance and security regulations are met.

APPLICATION INTEGRATION **solutions provide development frameworks, platforms and the expertise to help businesses securely deploy, distribute, manage and support mobile apps.**

TECHNOLOGY

Challenge: A leading technology company needed to improve the handling of urgent orders at the end of every month. They turned to Verizon to help find solutions that could speed up order processing and delivery. Now sales management teams can quickly approve pending orders in SAP and initiate provisioning and service-delivery workflows through their enterprise resource planning (ERP) system—all from mobile applications on their iPad® tablets.

Result: Reduced costs and saved time in mobilizing existing applications across multiple devices. Faster decision making, increasing sales and enhancing the customer experience.

VERIZON WAS THE NUMBER-ONE-RANKED TELECOM COMPANY IN FORTUNE MAGAZINE'S 2012 LIST OF THE WORLD'S MOST ADMIRED COMPANIES, INCLUDING FIRST-PLACE RANKINGS FOR INNOVATION AND QUALITY OF PRODUCTS AND SERVICES.[3]

CREATING A ***MOBILE ROADMAP.***

The best strategy starts with clarifying your objectives to meet the needs of your employees and your company:

- What systems do you have in place to protect company assets that are accessible to mobile employees, customers and others?
- How will you address the evolving security and privacy issues associated with both corporate data and personal data residing on employee-owned devices?
- How do you minimize risks by scaling access privileges based on user need, sensitivity/location of information and regulatory considerations?

Partnering with a world-class solution provider to securely manage employee-owned devices can help you safely navigate this next-generation mobile culture.

Additional solutions that can help your business implement a successful mobile strategy:

Managed Mobility and Enterprise Mobility as a Service

Mobility Professional Services

Wireless Devices

Voice and Messaging

Mobile Applications

Mobile Broadband

Global Communications

Private Network

MOBILITY IS IN OUR DNA.

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- A leading provider of managed security services and security consulting.
- The nation's largest 4G LTE network. More 4G LTE coverage than all other networks combined.
- Robust mobility professional services, life-cycle services and methodologies.
- Manage millions of identities worldwide for enterprises and governments.
- Provider of both cloud- and premises-based dual-persona solutions.
- Global support to assist you with the architecture, design and implementation of mobile application solutions.
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FOR MORE INFORMATION, CONTACT A VERIZON BUSINESS SPECIALIST, OR VISIT US AT ***VERIZON.COM/MOBILEWORKFORCE.***

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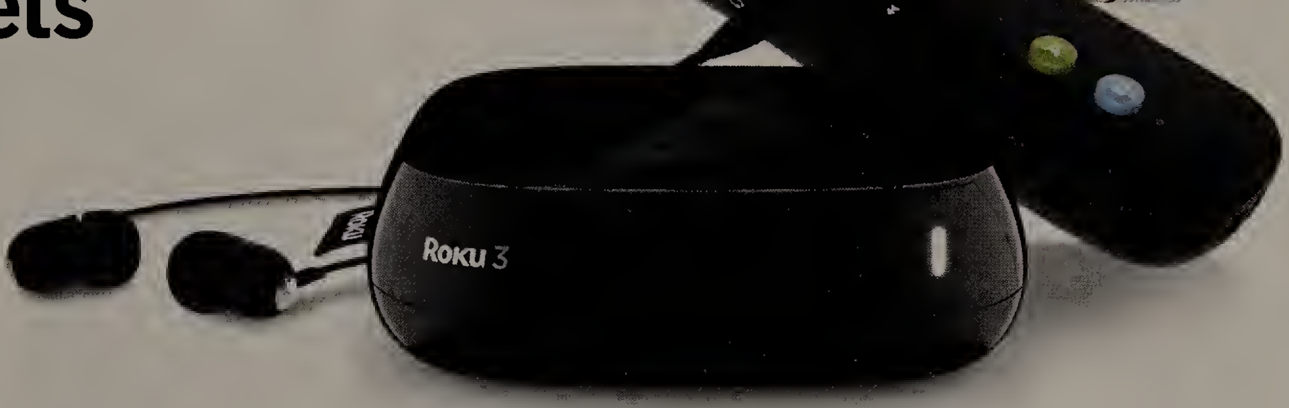
[3] http://newscenter2.verizon.com/press-releases/verizon/2012/verizon-is-top.html

4G LTE is available in more than 450 markets in the U.S. Network details & coverage maps at **vzw.com**. © 2013 Verizon Wireless.

Keith Shaw's Cool Tools

GADGETS

Wireless audio enhances two new gadgets



THE SCOOP

Roku 3 Internet streaming TV box

by Roku, about $100

▶ **What it is:** The latest connected TV box that provides Internet streaming service from Roku, the Roku 3 gets even smaller than previous models, and now includes a headphone jack (and included earbuds) that lets you wirelessly stream audio from the TV to the headphones/earbuds.

Like previous models of Roku, users can choose from services such as Netflix, Amazon Instant Video, Hulu Plus, Pandora, Spotify and hundreds of other free and pay services. The remote control includes motion-control features that let you play games on your TV (some cost extra, but Angry Birds Space is included for free).

▶ **Why it's cool:** The addition of the headphone jack may seem like a small enhancement, but it opens up new possibilities and uses for the device. For example, my kids love watching kid-friendly content via Netflix, but I hate having to listen to some of the shows when I'm doing something else in the room (I admit, I'm not a fan of PBS's "Arthur," one of my daughter's favorites). With the headphone jack, she can put a pair of headphones on and listen to the show without bothering others. This feature even makes listening to music more enjoyable via Pandora or Spotify.

The remote control continues to be the best in the business — because it works via radio frequency and not infrared, you don't have to point it directly at the Roku box in order to control it.

The Roku 3 is also the first model to feature dual-mode Wi-Fi connections, so if you separate your network between 2.4GHz and 5GHz for faster streaming, the Roku 3 can connect to the faster portion.

▶ **Some caveats:** I had some difficulty configuring the iOS app to find the new box on the network — the app lets you switch channels and find new services via a smartphone or tablet. The unit's small size can also be tricky when connecting the power outlet and an Ethernet cable — the extra weight of the cables tilted the unit back on the TV stand. In addition, this unit is for high-definition TVs only — the only connection is HDMI, and you have to buy the cable separately.

▶ **Grade** ★★★★½ **(out of five).**

THE SCOOP

Jabra Revo wireless headphones

by Jabra, about $250

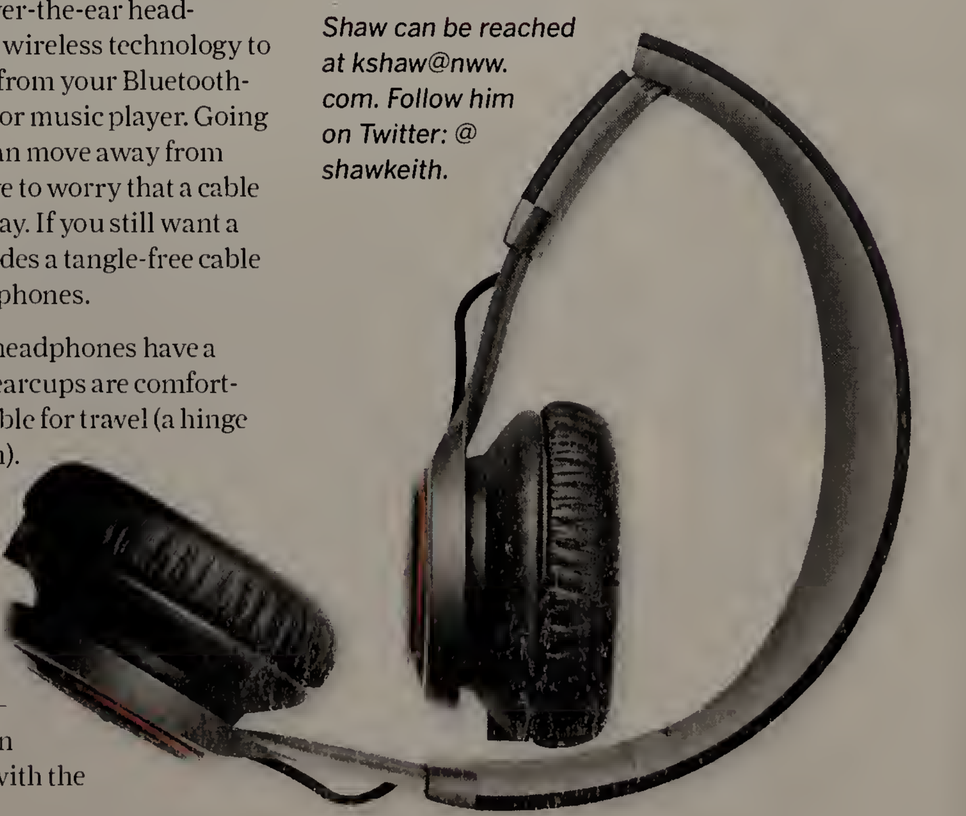
▶ **What it is:** These over-the-ear headphones use Bluetooth wireless technology to stream audio content from your Bluetooth-enabled phone, tablet or music player. Going cordless means you can move away from your player or not have to worry that a cable is going to get in the way. If you still want a wire, the system includes a tangle-free cable to connect to the headphones.

▶ **Why it's cool:** The headphones have a nice fit to them — the earcups are comfortable and they're portable for travel (a hinge lets the earcups fold in). Twirling your finger around an earcup lets you raise/lower the volume, and pressing the middle of the earcup can pause the music — you can also answer an incoming phone call with the other earcup button). Double-tapping on the top or bottom of the volume earcup lets you advance tracks or go back — the touch-controls mean you don't have to fiddle with tiny buttons, as seen on other headphones. In addition, a free Jabra app gives you an equalizer and Dolby Digital Plus features for your music.

▶ **Some caveats:** I tested these during a workout, and while the headphones never fell off, they did get sweaty by the end — you probably wouldn't want to share these with others. Other wireless headphones utilize earbuds that are sweatproof and geared more toward athletic use.

▶ **Grade** ★★★★★

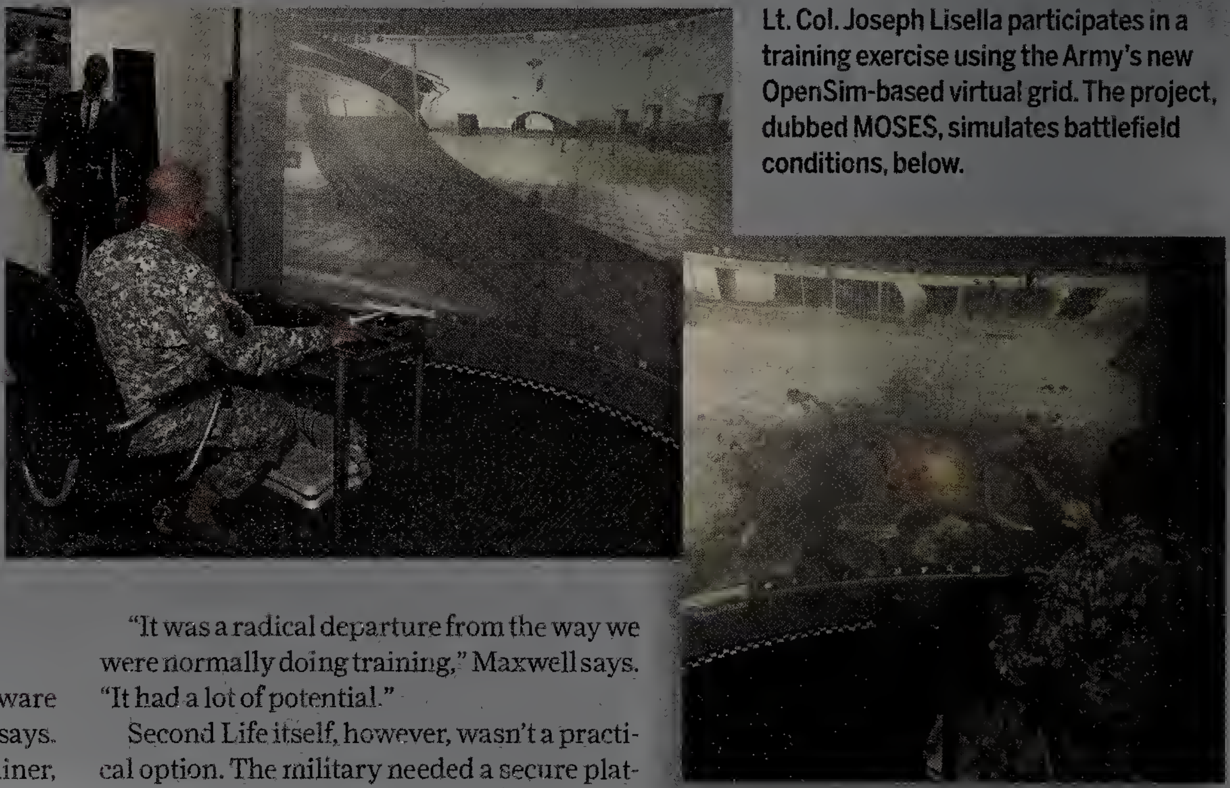
Shaw can be reached at kshaw@nww.com. Follow him on Twitter: @shawkeith.



U.S. Army goes virtual with OpenSim

Training center deploys alpha version of open source project to build Second Life-style virtual world grid

BY MARIA KOROLOV



Lt. Col. Joseph Lisella participates in a training exercise using the Army's new OpenSim-based virtual grid. The project, dubbed MOSES, simulates battlefield conditions, below.

THE U.S. Army is not new to using simulated virtual environments for training. In fact, almost all soldiers have used virtual simulations, according to Douglas Maxwell, the science and technology manager for virtual world strategic applications at the Army's Simulation and Training Technology Center in Orlando, Fla.

The problem is that, for the most part, each individual simulation is designed with a specific purpose — and each can take months of development and require the combined efforts of subject matter experts, instructional designers, 3D artists and developers.

"You do one unit of training, in one software simulation, and you move on," Maxwell says. "I wanted to create a general-purpose trainer, with persistence in-world. You log in and start where you left off from."

A few years ago, the military discovered Second Life, where users without any professional modeling or development background can quickly and cheaply create unique interactive environments through a combination of easy-to-use in-world building tools, and a wealth of ready-to-use, inexpensive virtual-world content like buildings, vehicles, weapons, clothing and terrains.

"It was a radical departure from the way we were normally doing training," Maxwell says. "It had a lot of potential."

Second Life itself, however, wasn't a practical option. The military needed a secure platform, one that could run completely behind the firewall, with access restricted to only approved personnel.

The Simulation and Training Technology Center (STTC) turned to OpenSimulator (OpenSim), an open source project that allows anyone with a server to host a Second Life-style virtual world grid. Work began in 2010 and, today, the Army's MOSES grid is about 3,000 square acres of virtual land, or about 4.5 square miles, accessible to anyone with an Internet connection, login credentials and a virtual worlds viewer. Currently, a separate, stand-alone viewer such as Firestorm is necessary to access OpenSim grids, Second Life and most other virtual environments, but as HTML 5 support improves, browser-based access will become possible.

MOSES, which stands for Military Open Simulator Enterprise Strategy, is a shared environment used not only by the

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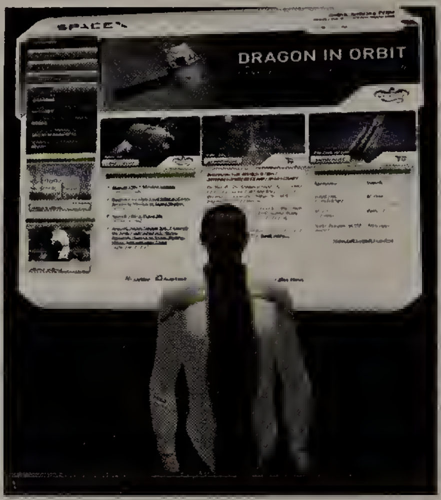
military, but also by approved outside training experts and virtual world developers. The programming is done by a mix of Army civilian employees, such as Maxwell himself, and contractors who create the 3D mesh models. A total of 50 people have worked on content development for MOSES and on the Unreal 3-based project EDGE (Enhanced Dynamic Geosocial Environment). The two projects can use the same content, since 3D mesh models can be uploaded to both platforms.

MOSES is used to design training simulations for soldiers, to hold virtual meetings, and to expand the potential uses of the virtual world technology. "I'm really impressed with OpenSimulator," Maxwell says. "For being an open source project, you get a tremendous amount of capability."

OpenSim includes support for vehicles and in-world scripting, as well as avatar appearance editing, inventories, payments, groups, search and instant messages. In fact, OpenSim currently offers users almost all the functionality available in Second Life, plus functions only available in OpenSim, such as the ability to export entire regions, support more than 1,000 avatars in a single region, or teleport between different, separate worlds.

The biggest downside of OpenSim, at this point, is that the graphics are lower-quality than those in the latest consumer video games. "Whenever you put OpenSim in front of a 21-year-old soldier used to playing Medal of Honor, that's the first thing they notice," Maxwell says.



Jim McDermott, founder of the FRG Institute and a professor of instructional design at Capella University, has one 16-acre region on MOSES.

Avatars can be more lifelike in a high-end engine as well, he says, with better joint articulation. "Inside the higher-fidelity engines, you can go down to the finger level if you want to, so if you're grabbing a weapon or climbing ladders, it looks a lot more natural."

But once the soldiers start to walk around inside the environment, they immediately notice that they have more capabilities than they do in any video game.

"In particular, in Fort Hood, Texas, I had a sergeant who wants to use this in his job at the Resilience Center, where they do suicide prevention and outreach," he says. "They like the anonymity — I've been told that the soldiers tend to open up more when they're in there."

Simulating simulations

One major function of the MOSES grid is to prototype virtual simulations. Trainers can log in to the world, quickly design environments, try them out on volunteers and make changes in real time. Then, when the simulation is finalized, it can be recreated in a high-end gaming engine like Unreal 3 for mass deployment.

For example, a training arena about half a mile on a side, or 144 virtual acres, can take six weeks to build in OpenSim. A similar level in a regular game engine would take six months to a year, Maxwell says.

The grid has already proved itself as a testing ground for functionality that will be ported to other platforms.

For example, OpenSim allows terrains to change in real time. Not only can a training designer quickly lift up the terrain to create a mountain, or lower it to create rivers and lakes, but terrains can also be affected by scripted objects.

A bomb, for example, can create a crater in the ground when it explodes. And if the crater isn't big enough, the script on the bomb can be quickly adjusted by a trainer so that the next explosion is bigger — without there being a need to shut down and restart the whole environment. Similarly, a trainer can rearrange the position of the explosive devices, so that soldiers don't simply memorize their positions.

"Even simple things we take for granted, like being able to modify your avatar's appearance, you don't normally do in a training simulation," Maxwell says.

The MOSES grid is also used for research, to explore what can be done with virtual environments and to collaborate with outside experts.

For example, virtual worlds learning expert Jim McDermott, founder of the FRG Institute and a professor of instructional design at Capella University, has one 16-acre region on MOSES that he uses to build virtual holodecks designed to teach science and engineering concepts. Individual groups that use MOSES can control the access to their regions, limiting it to particular groups or individuals, or permitting access to all grid users.

Dreamland Metaverse offers hosted OpenSim environments for enterprises. CEO Dierk Brunner estimates that 75% of his customers use the virtual world for salesforce training.

"But the power of the virtual world is not resident in technology," McDermott says. "It's resident in collaboration. That's really why I'm in MOSES. It's for the collaboration among people who have a very high level of experience in the virtual world, being brought together to share ideas."

In addition to allowing selected outside researchers access to the MOSES grid, Maxwell's team has also made a version of MOSES available for others to download. So far, about two dozen other government agencies have requested copies of the MOSES system, he says.

The OpenSim infrastructure

In many respects, OpenSim is similar to popular Web server projects, like Apache. Users have a choice of viewers that they can use to access OpenSim worlds, and only the region the user is looking at is downloaded at any given time.

This is in contrast to most immersive multi-user online role-playing games, where the entire world is installed ahead of time, and can be accessed only via a single proprietary viewer.

As a result, when a user enters a brand-new OpenSim environment, it can take from a few seconds to a few minutes to download all the local content — terrains, buildings, plants, scripts and so forth. But when a user decides to put up a new building, it's instantly visible and accessible to all the other visitors to the area.

OpenSim is also lightweight enough that an entire system — server, viewer and a few dozen acres of virtual land — can be run off a USB stick.

"We were able to place the OpenSim server on portable laptops and show demos to high-level decision makers," Maxwell says. "When we're able to show these concepts running in real time in front of the decision makers, that allowed for initial acceptance. We got a lot of backing from leadership based on those demonstrations."

The initial acceptance came even though OpenSim, in 2010, was still lacking key functionality. There was no support for uploading standard mesh objects — OpenSim only supported the creation or import of objects in Second Life's format, not objects created in Maya, Blender, or other popular 3D modeling programs. This changed in 2011, when the OpenSim developers added support for the popular Collada standard for mesh.

There was also no support for in-world media back then, though that was also quickly addressed. In-world media allows interactive Web pages to be projected on any surface, allowing access to videos, photographs, after-action reports, even interactive tools like Microsoft Office Live. "It's incredibly useful," Maxwell says.

Supportive environment

Unlike commercial virtual-world platforms, there is no single vendor to call on for support. There are a number of OpenSim hosting and consulting companies, however, and the open source community itself can also be a resource.

"We've enjoyed tremendous support, unusual support, from the open source community," Maxwell says. "Without exception, everyone we have reached out to had been helpful and gracious. We got lots of advice from Justin Clark-Casey and other [OpenSim developers] in helping us diagnose problems and troubleshoot."

OpenSim, after all, is still an evolving platform. According to OpenSim core developer Clark-Casey, the OpenSim software is currently "alpha" code. "There are a number of features that don't work very well, and we don't have formal APIs — people just call internal methods," he says.

The main problem is that creating a generalized platform for virtual worlds is a huge project. "This is complicated stuff," Clark-Casey says. "You always have a backlog of bugs. Some of this stuff you would never hit in typical situations — there's just a large surface area for these issues."

Despite this, there are already successful businesses using OpenSim as a platform, including commercial virtual worlds like InWorldz and Kitely.

The software is currently being used to power around 240 public virtual worlds, in addition to an unknown number of private business, education and personal grids. It has been downloaded an estimated 74,000 times since May 2010.

"I'm aware that people are starting to use it for commercial purposes," Clark-Casey says. "But we are at the very early stage, still trying to figure out what it's good for."

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The alternatives

According to Maxwell, the STTC looked at a number of other virtual-world environments, both enterprise-friendly proprietary platforms like SAIC's OLIVE, and video game engines like Unreal and Crytek.

"We understand that there's no one size fits all," he says. "No one product satisfies all of our graphic needs."

Sometimes what the Army needs most is high graphic fidelity, Maxwell says, such as when soldiers are being trained to spot improvised explosive devices (IEDs). Other times, what's important is the highest possible accuracy in physics.

"Sometimes you need a system that's very light on the network," he adds. "Sometimes you need a very flexible system."

Scalability and cost also come into play, he adds, as do license terms.

"We do understand that an engine can be proprietary," he says. "We don't have a problem with that. But whenever you buy content packs for those engines, and they're only for use with that engine and can't be reused in any other way, we see that as wasteful. We should not have to buy a [Humvee] over and over again."

Where to get it

Enterprises interested in trying out OpenSim can request a free copy of the MOSES environment for their own use. It comes with the server software, a customized client, and a 64-acre welcome area with a pre-built conference center. Companies can also download and install OpenSim from OpenSimulator.org.

Another option is to get grid hosting from a vendor like Dreamland Metaverse, which currently runs hundreds of grids for customers — companies, educational institutions, even individuals.

"About three-quarters are closed, private grids for sales training," says Dreamland Metaverse CEO and founder Dierk Brunner. There are also schools using private virtual worlds for educational simulations, like Georgia's Forsyth County Schools, where several small grids are used to teach math, science and other subjects. ■

Korolov is a freelance writer. She can be reached at maria@tromblyinternational.com.

Is the cloud ready for mission-critical apps?

For most companies, yes

Alexander Pasik, chief information officer of the IEEE

CLOUD COMPUTING is ready to support mission-critical applications. Providers' track records of reliability, along with the fact that IT management is their core competence, should allay fears about the perceived stumbling blocks of security and availability.

More companies are realizing the economic benefits of moving mission-critical applications to the cloud and taking advantage of the chance it affords them to focus on their own core competence, which for most companies is not IT management. These early adopters have also recognized that the appropriateness of cloud computing varies by the "flavor" of the service, from infrastructure as a service (IaaS) to software as a service (SaaS).

Moving along the spectrum from on-premises computing to IaaS and ultimately to SaaS brings increasing economies of scale as greater portions of the technology stack are shared across the client base. Whereas IaaS saves businesses money via shared hardware, real estate and power, SaaS achieves even greater economies of scale with shared applications, some key examples being Google Apps, Salesforce and NetSuite.

Many leading SaaS vendors have strong track records of reliability and security. Delivering this value is their specialty. To perpetuate that reputation, they invest far more in securing their environments than most non-cloud computing companies do securing their own data centers.

Given this dedicated attention to security, trepidation about the safety of the cloud is largely unfounded. It's a psychological fear, akin to believing money under the mattress is safer than money in the bank. Overcoming this fear, both by understanding the provider's capabilities and by negotiating the appropriate service-level agreements (SLA), will allow companies to reap the savings associated with moving mission-critical applications to the cloud.

Economic arguments may not be as strong when it comes to justifying the use of IaaS, but the advantages lie in provider resilience — the ability of these vendors to offer greater performance in terms of

► *See* **Ready,** *page 29*

Not yet

Sanjib Sahoo, chief technology officer at tradeMONSTER and OptionMonster Holdings Inc.

THE CLOUD is not fully ready for mission-critical apps. While the technology is rapidly maturing, it has catching up to do in terms of reliability, bandwidth management, latency and performance, security, cost of data storage and several other aspects.

Cloud computing is increasing in popularity, and rightfully so, but it is not ready for every organization, and especially not for financial trading organizations like ours — tradeMONSTER, a top-rated online brokerage firm. Even though there are some clear benefits, we are not moving to the cloud yet.

In evaluating cloud viability, organizations should categorize their applications into critical and non-critical and clearly assess the pros and cons. For trading companies like ours, the most important thing is getting guaranteed trade execution. Right now, that means dedicated lines to execution vendors and market makers, and those must be closely monitored.

Due to the difficulty and high cost of managing a private network within the cloud and lack of a guaranteed quality of service, critical trading apps have not taken to the cloud. Also, with no control over where servers are deployed geographically, latencies can't be controlled, which is a serious competitive disadvantage for trading firms.

There is a perception that the cloud reduces costs (both resource and money) compared to deploying your own infrastructure. But consider our case. The cost of handling high volumes of market data (almost 8 billion quotes during a 6 ½ hour trading day) and transactions would add up to a huge expense in the cloud.

Market data is not only I/O intensive but also exhibits tremendous message rate spikes due to market volatility, requiring substantial, instantaneous bandwidth expansion. Supporting market data transmission in the cloud would not only be more expensive, but it would add latency, which diminishes the value of the data and reduces the trading firm's quality of service.

Another related cost disadvantage of the cloud for our application is that much of the historical data must be stored so it can be used for charting

► *See* **Not ready**, *page 29*

Is the cloud ready for mission-critical apps?

Cast your vote and see comments at tinyurl.com/boy6ad6

▶ **Ready,** *from page 28*

reliability and scalability than customers do on their own. While individual companies have to build out infrastructure to handle peak loads, cloud providers offer an elastic approach of scaling resources that is more efficient and cost-effective.

Reported outages and cloud service disruptions, however, are increasing potential users' wariness. Not long ago, for instance, an Amazon data center went offline, affecting popular websites like Reddit, Foursquare and Pinterest. Wide reporting on this event — which unluckily affected social media sites, and hence a large number of users — has driven concerns about potential lapses in availability among cloud providers. But such problems are particularly visible because of their high-profile nature. Outages of this kind are far more common in enterprises that manage their own infrastructure.

Reliability and continuity, particularly in the face of major natural disasters, are in fact much better in the cloud. At IEEE, for example, we were fortunate enough to have moved many of our applications to cloud providers prior to Superstorm Sandy, the late-October storm that ravaged the mid-Atlantic and northeastern states. In New Jersey, where IEEE's operations headquarters is located, widespread power outages were accompanied by a fuel distribution crisis that stymied not only motor vehicle traffic, but also backup generators. However, since part of our business continuity strategy included the use of SaaS and IaaS for many applications, our management of key applications was far easier and more reliable.

RELIABILITY AND CONTINUITY, PARTICULARLY IN THE FACE OF MAJOR NATURAL DISASTERS, ARE IN FACT MUCH BETTER IN THE CLOUD.

To further alleviate concerns about security and availability, companies can often negotiate SLAs with the cloud provider. These contracts are promises to address the chief concerns of businesses, whether they be performance, response time, scalability or some other metric. Specifying these parameters in an SLA provides the security of recourse if the levels are not met. Though many cloud computing companies don't immediately offer SLAs, it is typically a point for negotiation.

In summary, businesses that are hesitant about moving their essential applications to the cloud should not let fear stop them. They should evaluate providers' track records of reliability to deliver secure and consistent services, and negotiate SLAs so they can begin to take advantage of the economic opportunities offered by mission-critical applications in the cloud. ■

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▶ **Not ready,** *from page 28*

and analysis tools. This dataset can go back 20 years. Data storage in the cloud is generally more expensive than storage on your own servers.

Brokerage firms like tradeMONSTER are subject to substantial regulatory oversight, including regulations regarding storage and protection of customer data. Storing sensitive data like Social Security numbers and date of birth in a cloud infrastructure would raise serious issues with regulators. Another important concern is that the regulations require regular backups as well as keeping continuous off-site backups. This becomes a huge issue, especially when several transactional and other data including logs have to be archived for regulatory reasons.

High availability is absolutely critical in trading applications because any downtime causes not only financial exposure but legal liabilities. The application systems are designed in such a fashion that they are clustered and highly available. More importantly, they are hooked into enterprise monitoring systems where the production support team is constantly monitoring network load, CPU, threads, memory, etc.

Super-high availability requirements are more difficult to achieve when mission-critical apps are deployed in the cloud. The recent outages at Amazon and cloud sites not only raise questions about the cloud model, but introduce new risk for organizations that have their destiny dependent on an environment where there is only limited monitoring and control.

This requires a substantial level of trust in the vendor, because trading firms cannot independently verify assurances of redundant power, disk, network, backups, etc.

At tradeMONSTER we have to integrate with many different third parties including clearing, execution vendors, market makers, market data vendors and business partners. To make this entire platform agnostic and build separate clouds of integration points with network integrations will only lead to a nightmare and increased costs.

HIGH AVAILABILITY IS ABSOLUTELY CRITICAL IN TRADING APPLICATIONS BECAUSE ANY DOWNTIME CAUSES NOT ONLY FINANCIAL EXPOSURE BUT LEGAL LIABILITIES.

While the cloud solution really comes with several positives, like consolidated hardware footprint, resources sharing, etc., it is still not ready for mission-critical apps, particularly for organizations like ours. A trade-off may be deploying some non-critical apps to the cloud to try it out. Also in the near future, organizations with hyper-critical apps like ours might build private clouds to gain flexibility, more control and more options to scale. ■

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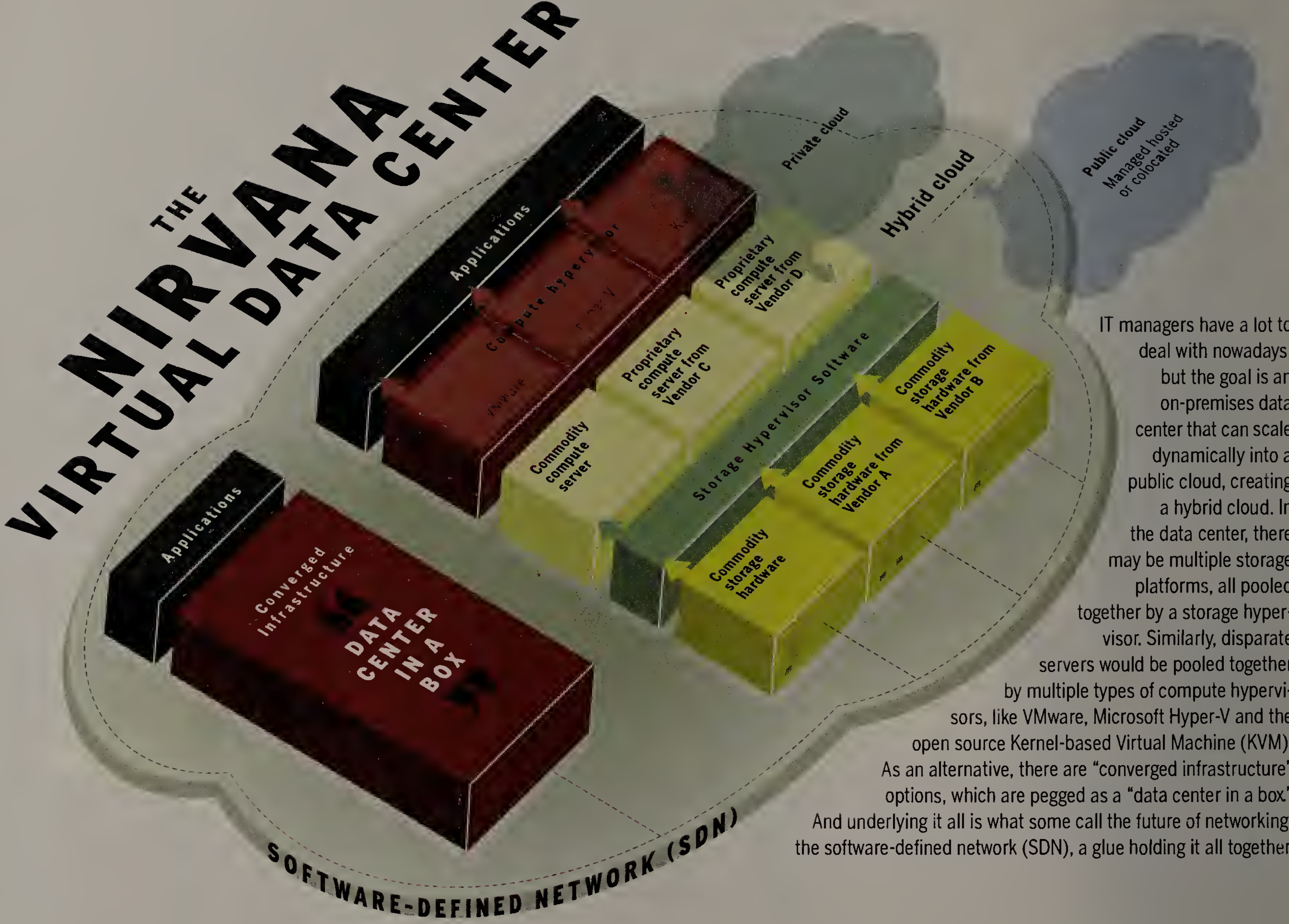
MULTI-HYPERVISOR MANAGEMENT,
HYBRID CLOUD CONNECTIVITY
AND CONVERGED INFRASTRUCTURE
IMPLEMENTATION ... THE REWARDS
AND THE CHALLENGES OF THE
NEW DATA CENTER

DING THE VIRTUAL DATA CENTER

BY BRANDON BUTLER • ILLUSTRATION BY LEE HASSLER

EVEN IF YOU'VE NEVER HEARD OF FLEXTRONICS you have probably used or benefited from one of the products this global digital equipment manufacturer has helped assemble — a Microsoft Xbox 360, for example, or components that show up in everything from Cisco and Motorola devices to aerospace and automotive equipment.

With 250,000 employees in 30 countries, Flextronics has more than 10,000 servers, about half of which are virtualized in two major data centers — one in the U.S. and the other in Hong Kong — while the rest are scattered across 130 locations worldwide. CIO David Smoley — who will soon become CIO of AstraZenca — says his overarching goal is to migrate as much hardware as possible from these individual sites to the data center hubs: "The opportunity to push virtualization to its limits in an effort to improve our ability to supply resources to our users is super important to us."


Applications
Converged Infrastructure
DATA CENTER IN A BOX
Applications
Compute hypervisor
VMware
Commodity compute server
Proprietary compute server from Vendor C
Proprietary compute server from Vendor D
Storage Hypervisor Software
Commodity storage hardware
Commodity storage hardware from Vendor A
Commodity storage hardware from Vendor B
Private cloud
Hybrid cloud
Public cloud
Managed hosted or colocated
SOFTWARE-DEFINED NETWORK (SDN)

THE NIRVANA VIRTUAL DATA CENTER

IT managers have a lot to deal with nowadays, but the goal is an on-premises data center that can scale dynamically into a public cloud, creating a hybrid cloud. In the data center, there may be multiple storage platforms, all pooled together by a storage hypervisor. Similarly, disparate servers would be pooled together by multiple types of compute hypervisors, like VMware, Microsoft Hyper-V and the open source Kernel-based Virtual Machine (KVM). As an alternative, there are "converged infrastructure" options, which are pegged as a "data center in a box." And underlying it all is what some call the future of networking: the software-defined network (SDN), a glue holding it all together.

Smoley and other executives envision a virtual data center nirvana where behind-the-firewall IT resources handle mission-critical workloads and a connected secure public cloud provides additional capacity.

Getting there is a challenge, but what's making it feasible is the convergence of multiple technologies. Virtualization has rewritten the rules for compute and is now making waves in storage and networking, and cloud computing and converged infrastructure options are coming on strong. Yet speed bumps abound. IT shops are wrestling with everything from heterogeneous hypervisor environments to concerns about security, reliability, availability, performance and even staffing and expertise. So where are we in getting to that nirvana vision? "It's not a reality yet," Smoley says, "but we're getting close."

Virtualization and its vices

Forrester virtualization analyst David Bartoletti says 59% of compute workloads are virtualized in enterprise data centers today, up from 45% just two years ago, and climbing to an expected cap of about 80% of workloads in the coming years. "Most of the easy workloads have been virtualized," he says. There will always be some apps that just run better on dedicated hardware, Bartoletti says, but the majority will be virtualized given the cost, efficiencies and agility that abstracting the compute layer from hardware provides.

The virtualization market has undergone dramatic shifts in the past 12 to 18 months. VMware, an EMC company, still dominates the industry, but other hypervisor platforms are making inroads — most notably, Microsoft Hyper-V. Independent analyst Zeus Kerravala found that 20% of VMware customers he surveyed last year were already implementing Hyper-V. This increasingly multi-hypervisor world brings with it new challenges.

For example, VMware's vMotion allows for the transfer of virtual machines and applications from one cluster of virtualized servers to another, but only if they're both running VMware. Transferring active virtual machines across disparate hypervisors requires still more tools. Smoley, for example, is piloting software from HotLink, a 2010 startup by former VMware executives, to manage heterogeneous hypervisor environments across the company's sites around the globe.

"A beautiful end state would be a data center with different hardware pieces throughout, all brought together under a software layer so resources can be placed where they are most needed," Forrester's Bartoletti says. But a world of increasing heterogeneity on the hypervisor layer is making that vision more difficult to attain, not easier.

Bringing up the rear

While compute virtualization has become mainstream, network and storage virtualization are less mature, even though the latter has been around for some time. It turns out that this stuff can be pretty difficult to implement.

"The fundamental idea of storage virtualization is similar to that of compute virtualization. Storage no longer has to be dedicated to specific servers or even virtual machines; software instead pools storage resources and makes it possible to centrally manage them. As a result, heterogeneous storage components can be presented as a single resource to virtual machines, obviating the need to manage those disparate storage disks separately. Dru Borden, CEO of cloud storage provider Nirvanix, estimates that less than one-fifth of enterprise customers have true virtualized storage environments deployed — the market is still young."

"When you're talking storage you're talking speeds and feeds," he says, more specifically input and output per second (IOPS). Storage hypervisor vendors that enable resource pooling are reluctant to provide IOPS guarantees when managing competitors' hardware. And if storage virtualization providers can't

Ensuring an always-on data center has the highest operational efficiency

Why the power to save energy goes beyond eco-mode

BY PETER PANFIL,
EMERSON NETWORK POWER

In today's always-on, always efficient data center environments, it's easy to get caught up in the numbers, especially when it comes to UPS performance.

Availability is the highest priority of any data center, and the UPS system is the keystone that ensures the data center is always powered.

At the same time, cost savings and energy efficiency are common business priorities. When planning for a UPS, it pays to consider multiple efficiency strategies that will effectively support availability requirements.

Avoid the Ratings Game

Thanks to advances in UPS technology, the potential to cut energy costs by tens of thousands of dollars annually has never been greater. But don't be swayed by a 1 or 2% efficiency difference unless availability for the data center is the same for each UPS option.

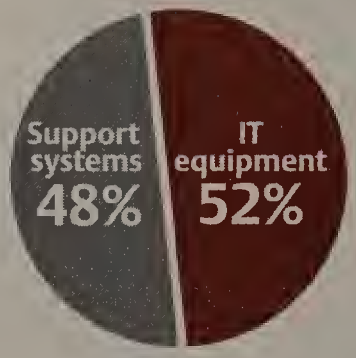
Higher Voltage = Bigger Savings

It might sound strange to think that increasing your system level voltage can actually save money, but it can — and a lot of it. 575/600VAC from the source, through the UPS and distribution, uses more of the available capacity of gear, breakers and wiring. Adding a PDU that compartmentalizes faults and runs the IT equipment at its highest efficiency point delivers the most bang for the buck.

Think Eco-Intelligent

Eco-mode has done wonders for improving UPS efficiency, but it comes with a cost: some methods of switching to eco-mode and back again may leave availability vulnerable. Ask the UPS supplier to explain how the equipment safely switches to and from eco-mode, and ask to see the waveform at the point of transfer to ensure that the power is free of disruptive notches.

Total Data Center Energy Consumption



By the Numbers*

48%	Energy use of infrastructure equipment—cooling, UPS, PDU and lighting
56%	Growth rate of electricity consumption globally between 2005 and 2010
$6K	Estimated cost to operate a server annually in a typical data center
6-7%	Estimated savings achieved by deploying a UPS with higher voltage and Intelligent Eco-mode

*Citations from Energy Logic 2.0; Growth in Data Center Electricity Use 2005 to 2010; and VMware TCO Calculator

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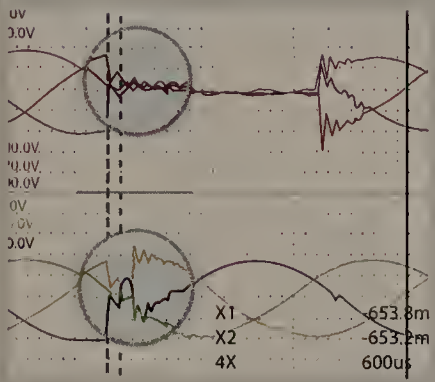

When transferring to eco-mode, make sure the UPS provides a continuous, uninterrupted waveform - interrupted transfer notches are potentially disruptive to operation.

About the Author: Peter Panfil is Vice President of Liebert AC Power, Emerson Network Power

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guarantee performances, IT managers will be reluctant to virtualize storage for their IOPS-heavy Tier 1 applications. The promise of storage virtualization is real, though: The ability to use commodity storage hardware, instead of proprietary systems from big-name vendors like EMC or NetApp, can yield savings of 30% to 60%, Borden says.

> **“AFTER TWO YEARS, I’VE ALREADY PAID OFF ALL OF MY INVESTMENTS, PLUS MORE.”**
>
> **MICHAEL FERGUSON,** DIRECTOR OF IT FOR MIDSIZE LAW FIRM

An alternative to on-premises storage virtualization is to use a cloud storage option, which is what Borden’s Nirvanix offers. Customers can choose to have storage on their premises on hardware managed by Nirvanix, or in the company’s cloud. Virtualized data can migrate between the on-premises hardware and the cloud. EMC, NetApp and other storage giants offer similar services. Borden argues this too is storage virtualization because the data is portable — it uses either internal hardware components or external cloud resources.

But this approach comes with the usual concerns about cloud — perceived security and multi-tenancy risks and questions about bandwidth needs. The possibility to increase value, efficiency and agility is appealing, but implementing storage virtualization in practice is easier said than done, and hence the light market adoption.

Networking

Even less mature is network virtualization — the glue that promises to bring together all the elements in the virtual data center.

The fundamental premise of network virtualization is to centralize switching and routing control to make networks easier to manage, more dynamic and easier to scale. Network virtualization “will drastically reduce the provisioning time of network resources, and in an age where IT lives and dies by the time it takes to get things done, that’s an advantage,” says Martin Casado, VMware’s chief networking architect and a pioneer of OpenFlow, a key protocol in the virtual software-defined networking (SDN) world.

SDN is just emerging, though, and most enterprises have yet to map their SDN strategies, says Matthew Palmer, an SDN consultant at Wiretap Ventures and a blogger at SDNCentral. “Customers want to see proof of concepts in deployment before they pay the big money to custom build these solutions to their specific needs,” he says.

Early SDN proponents include cloud service providers supporting multi-tenant environments, and progressive large enterprises looking to get efficiencies enjoyed by service providers. This year and next are when many proof of concepts will be piloted; 2014 or maybe even 2015 will likely be the years of significant customer adoption, Palmer predicts.

VMware is betting the mainstream market will develop faster than that. After spending $1.2 billion to purchase virtual network company Nicira last year — where Casado served as CTO — VMware just announced it will fold Nicira’s technology into its vCloud suite and roll out a VMware-powered hybrid public cloud service. Through a software update and a new controller, customers will be able to create virtual network environments without having to rip and replace existing hardware, VMware says.

Convergence, cloud complicate matters

Companies that are tired of integrating the components on their own might opt for one of the “data center in a box” options. Proponents of the approach have a simple proposition: Why have separate appliances for compute, networking, storage, deduplication and WAN optimization when you can just have one system that does it all?

“We’ve crossed the chasm where we’re in the phase of the early majority of adopters using this technology,” says Trey Layton, CTO of converged infrastructure conglomerate VCE, a partnership among EMC, VMware and Cisco that delivers unified systems. Boxes come pre-configured, ready to install and scale by adding more of whatever is necessary.

There are also a variety of companies like Nutanix and SimpliVity offering hyper-convergence boxes, systems that have been engineered from the ground up to integrate a number of services. This is opposed to VCE’s strategy of optimizing products from three companies to create a single solution.

While the ease of use is tempting, it comes at a cost, Smoley from Flextronics says: “In my mind, it raises concerns about vendor lock-in.”

If the enterprise is successful in aligning all the pieces of the virtual data center on-premises, ultimately they are going to want to complement that with cloud resources. Customers have more choice than ever when it comes to cloud computing, but many still question if the cloud is ready for enterprise-grade production workloads. “While the technology is rapidly maturing, it has catching up to do,” Sanjib Sahoo, CTO at tradeMONSTER, wrote in this week’s *Network World* Tech Debate (page 28).

Jacques Greyling, vice president of data center infrastructure for outsourcing provider Rackspace, says cloud is typically best for dynamic workloads that have demand spikes because servers can be spun up and down quickly. Static and sensitive workloads are more likely to run on infrastructure dedicated to individual customers in a managed hosting environment, he says. There are exceptions to any rule; Netflix proudly runs most of its business-critical video streaming services on Amazon Web Services’ cloud, for example, as do many Web startup companies who live all in AWS’s cloud.

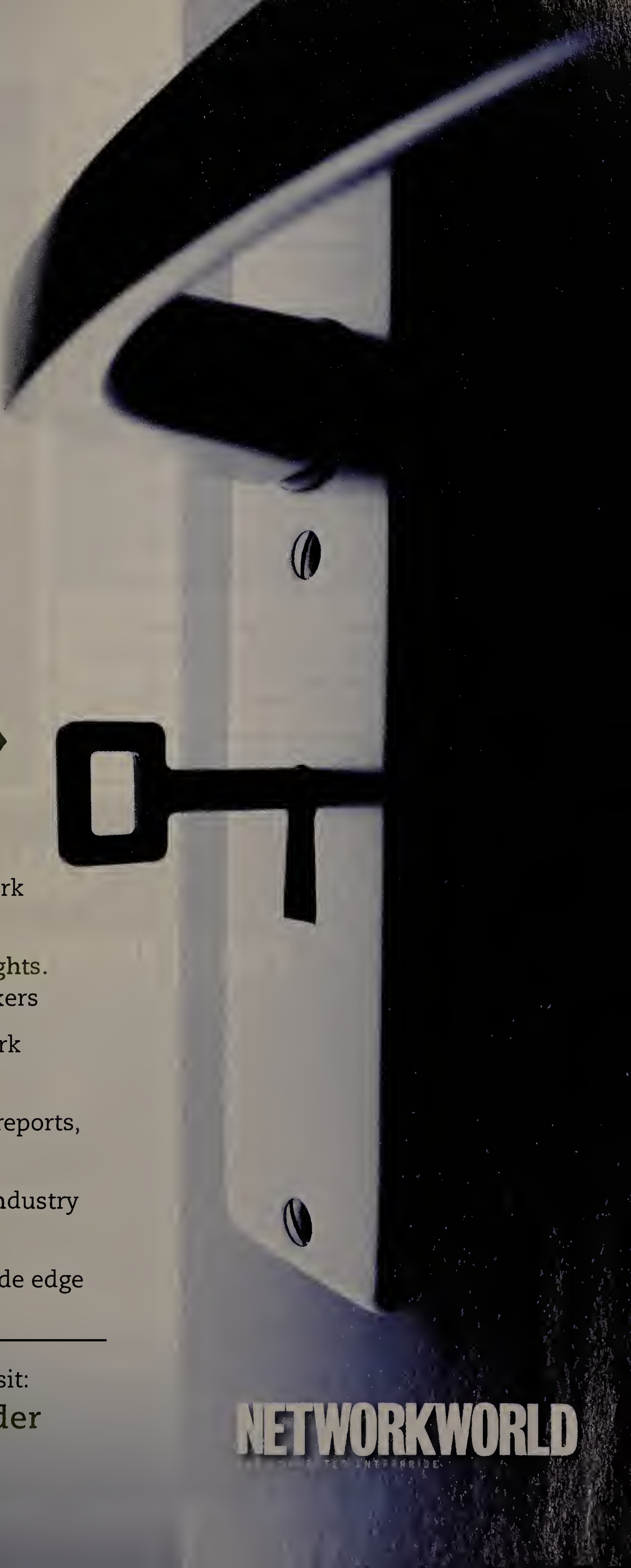
The technology to support the nirvana vision of hybrid cloud connectivity that allows dynamic scaling is still a slight ways off, Greyling says. It requires significant changes in network topology, which the company is addressing by implementing software-defined networking functionality. Doing so allows the easy creation of virtual LANs for individual customers and the ability to segment them off from one another. Combine that with common management platforms — in Rackspace’s case OpenStack — that spans the customer’s site and the Rackspace cloud, and the hybrid cloud model starts to become a reality.

There is hope

Despite all the challenges — from virtualization management to converged infrastructure to the cloud — companies are making progress toward the virtual data center. Take Michael Ferguson, director of IT for midsize Miami law firm Rennert, Vogel, Mandler & Rodriguez, which two years ago made a switch to embrace compute and storage virtualization.

It’s not necessarily the perfect nirvana vision, but it has significantly eased IT management. He now centrally controls all of the servers from a single screen using VMware vCenter, and his virtualized storage array powered by storage hypervisor platform DataCore’s SANsymphony-V has created a highly available environment, backed up with off-site colocation disaster recovery.

“After two years, I’ve already paid off all of my investments, plus more,” says Ferguson, who hasn’t bought a new server since installing the system, even though the firm has continued to grow. ■



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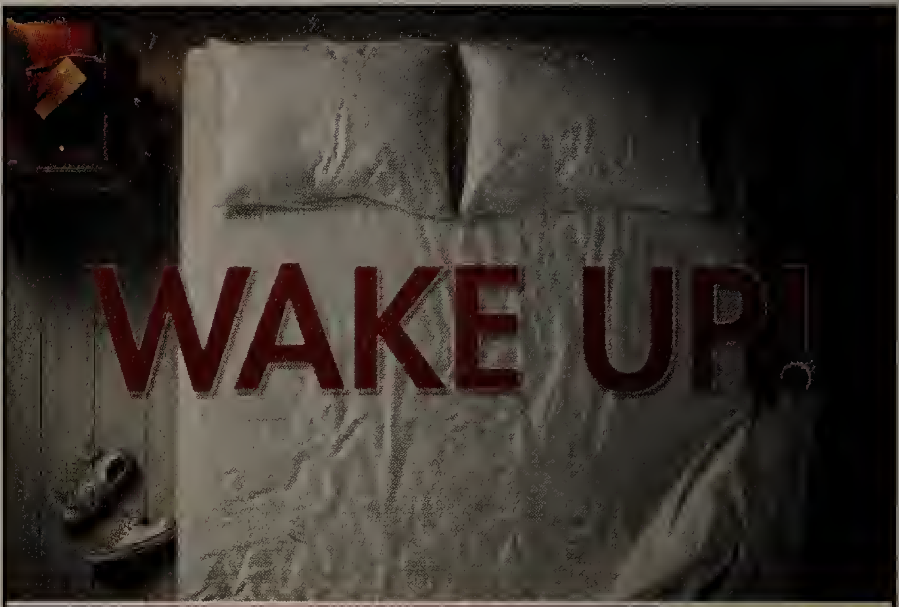

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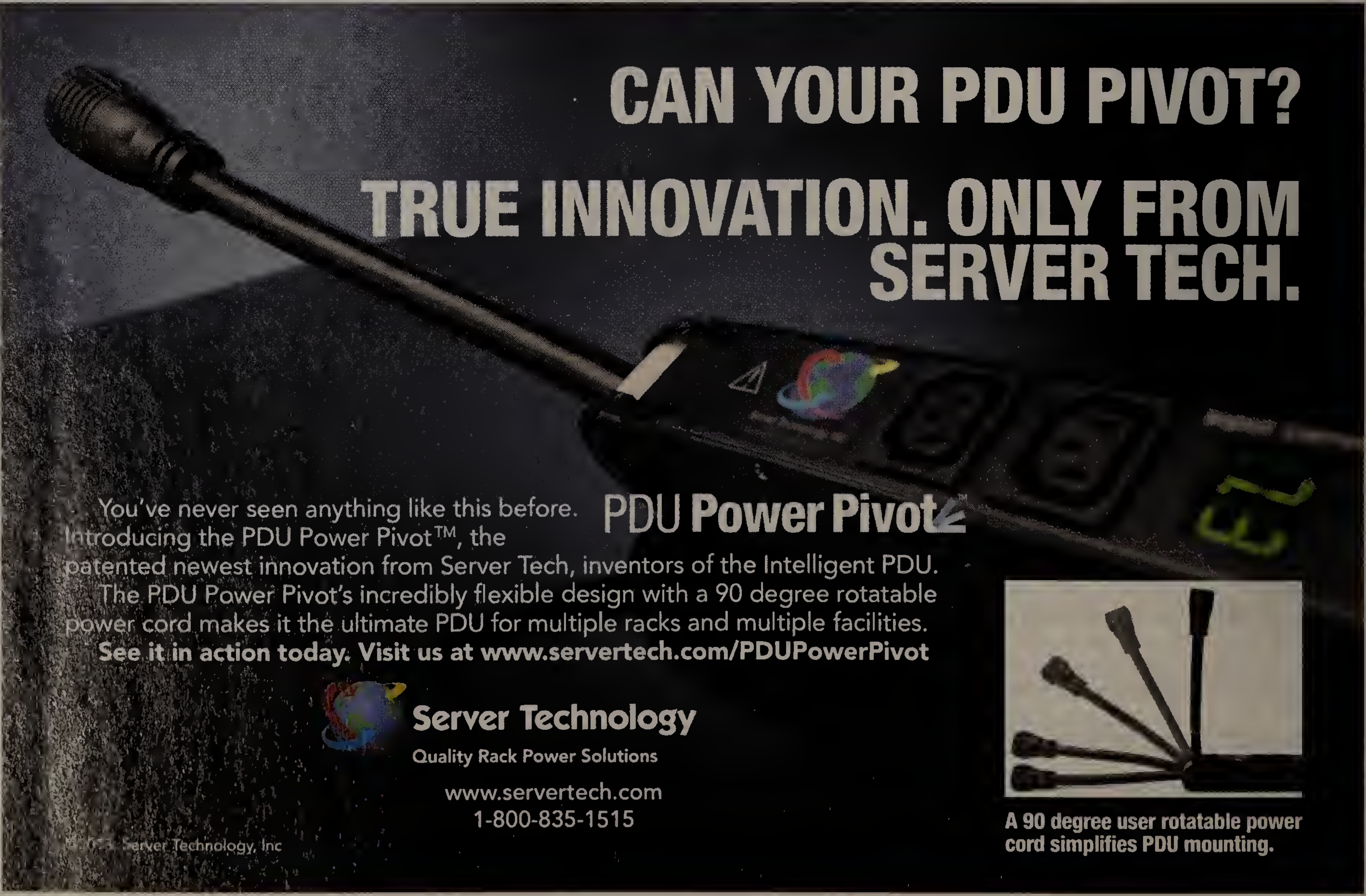

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Editorial Index

Amazon........................ 8, 29, 34
Apple............................. 6, 14
Arbor Networks........................ 10
AT&T................................ 8
Avaya............................... 14
Check Point Software Technologies 10
Cisco................ 6, 8, 9, 10, 14, 31, 34
Crytek............................... 27
DataCore 34
Dreamland Metaverse 27
EMC............................. 32, 34
Flextronics........................... 31
Google......................... 8, 14, 28
HotLink.............................. 32
HP 9, 10
IOActive 12
Jabra................................ 23
Microsoft 8, 14, 27, 31, 32
Motorola............................. 31
NetApp.............................. 34
Netflix............................... 34
NetSuite............................. 28
Nirvanix......................... 32, 34
Nutanix.............................. 34
Oracle................................ 5
Palo Alto Networks.................... 10
Rackspace........................... 34
Roku 23
Salesforce............................ 28
Samsung 6
Satechi 16
SimpliVity............................ 34
Sonatype 12
Sourcefire............................ 12
tradeMONSTER.................... 28, 29
VCE 34
VMware......................... 32, 34
WhiteSource 12

Advertiser Index

Advertiser	Page #	URL
APC	17	www.SEreply.com
Blackberry	39	blackberry.com/business
Brocade	4	www.brocade.com/easy
Century Link	7	centurylink.com/link
Cisco	11	www.VCE.com/ROI
Cisco	13	cisco.com/servers
dtSearch	36	www.dtsearch.com
Emerson	33	EmersonNetworkPower.com/knowUPS
HP	3	convergedinfrastructure.com/NW
IBM	40	ibm.com/systems/resilent
Sensaphone	36	www.sensaphone.com
Server Tech	36	www.servertech.com
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Splunk	15	www.splunk.com/goto/listen
Verizon	18-22	verizon.com/powerfulanswers

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BACKSPIN | BY MARK GIBBS

Fixing process exceptions. And music on hold

IF MUSIC be the food of love, then my medical insurance provider, Anthem Blue Cross, has a very distorted kind of love for me. I received a letter from the company a few days ago titled "Notice of Grace Period" which informed me that my payment hadn't been received. This did not please me because I knew I'd made a payment.

I use my bank's bill pay service and there, in my account, was the debit for my medical insurance dated March 1, and here we were almost two weeks later. There was only one thing to do: stiffen up the sinew, summon up the blood, and call customer service.

As usual, there was dreadful on-hold music with the usual distortion just to make waiting as aggravating as possible. After an interminable hold I spoke with a rep who tried to find my payment in the system using my bank details, but there was no trace. She suggested I call my bank.

Sigh. On to my bank. Horrendous muzak again, and if I thought the insurance company music was distorted, this one kept getting bursts of static that sounded like canons being fired.

Anyway, after another tediously long hold, I got a rep who confirmed the money had been debited from my account and sent electronically to Anthem. OK, back to Anthem.

Another hold, different rep. No, she tells me, they don't accept any electronic transactions. None at all. Never had. Not set up for it. Hmm. Seems unlikely but hey, what do I know?

Back to my bank. Rep tells me that they do send all transactions electronically. Ask for a supervisor. Supervisor says they send the bill pay transactions to a clearinghouse which, if it can't send the payments electronically, sends a paper check. My head was about to explode.

I'm going to cut to the chase: It's partially my fault, but also the fault of Anthem Blue Cross for some very odd reasons.

Last November I had to change my policy and with the changes came a new account number. Unfortunately I didn't change the details in bill pay so I was still using the old account number ... and it was to that account where the payments were going.

What was inexplicable was that the payments had, for the last three months, been routed from the old account to my new account. The Anthem rep couldn't explain how this had happened, who had been doing it, or why they stopped doing it.

So, what can we learn from this? The take-away is that you must identify all of your process endpoints and exceptions and make sure that procedures exist to resolve the exceptions.

In my case an exception should have been raised by a payment being applied to a closed account. Only in a different reality where systems engineering is merely a nice idea — which is apparently how the IT department at Anthem Blue Cross thinks — could this happen without generating an exception. Do as Anthem did and you'll have angry customers who will, like me, have wasted over five hours sorting out what should never have been a problem in the first place!

One last thing: Brand managers should occasionally listen to their customer service lines to make sure that when they are pissing off customers royally by running them around for hours, they aren't adding insult to injury with lousy, distorted music on hold. ■

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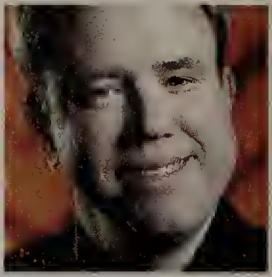

NETBUZZ | BY PAUL MCNAMARA

Cautionary tale from a Twitter 'share-cropper'

TWIT CLEANER is a popular Web app that has been used by hundreds of thousands of Twitter users to clear deadwood from their accounts. Now, however, Twit Cleaner has become one of the latest victims of Twitter's controversial API changes, according to the site's sole proprietor, Si Dawson, who told me recently: "It's simply technically impossible for me to continue."

By sheer coincidence, I had begun using Twit Cleaner days before Dawson announced its demise. It is gre ... make that, it was great. And it will be missed by users, some of whom Dawson described as being "in grief." He announced his decision in a blog post:

"This week I worked 62 hours straight. Actually, that's a lie, I worked 65 hours straight, with 3 hours of naps. ... Twitter has stopped being fun.

"I started Twit Cleaner in 2009. Given that I haven't managed to develop a livable income out of it in that time (barring donations from you many wonderful, generous people), it's pretty obvious I'm not in it for the money. It's been my primary occupation over that time, and absorbed several thousand hours of coding, designing, building, testing and supporting it. Everything on Twit Cleaner (bar some low level server decisions), I've personally done.

"I wanted to make Twitter a better place for everyone. I love to code. I love helping people. That's it. Unfortunately, the new API is so crippling that Twit Cleaner is unable to continue."

I sent Dawson some questions via email.

Is there any chance you might reconsider?

"Unfortunately, it's largely out of my hands. It's simply technically impossible for me to continue, due to the radically tightened limits that Twitter introduced with v1.1.

"I do understand why they've done this — partly to get more fine-tuned control over usage, partly to smooth out demand peaks. If someone can make 20,000 calls in a minute, that's a gigantic drain on their servers. Multiply that by the 1 million apps they have, and that's a sys admin nightmare. The new model is much, much simpler to manage, from their perspective.

"Unfortunately, it limits developers to largely trivial applications (although I'm sure they'd disagree)."

You don't seem angry toward Twitter. Are you really that good of a sport?

"The people I've interacted with at Twitter have always been patient, helpful and kind. Now true, I haven't been dealing with the guys at the top calling the shots — so I can't speak to their motivations. Obviously there's large pressure there to turn Twitter into a profitable business, but the guys I've dealt with who are actually getting the work done? I have huge respect for them.

"It's definitely rough as the sands shift beneath your feet, but that really gets back to my primary lesson: Being a share-cropper (building something on someone else's platform) is a fool's paradise. Fun while it lasts, but ultimately doomed."

Somewhat surprisingly, Dawson hasn't lost his sense of humor, as evidenced by this tweet: "Just realized that I'm going to have to clean my Twitter account manually from now on. Wow, that's gonna suck." ■

Have your own tale of woe? The address is buzz@nww.com.

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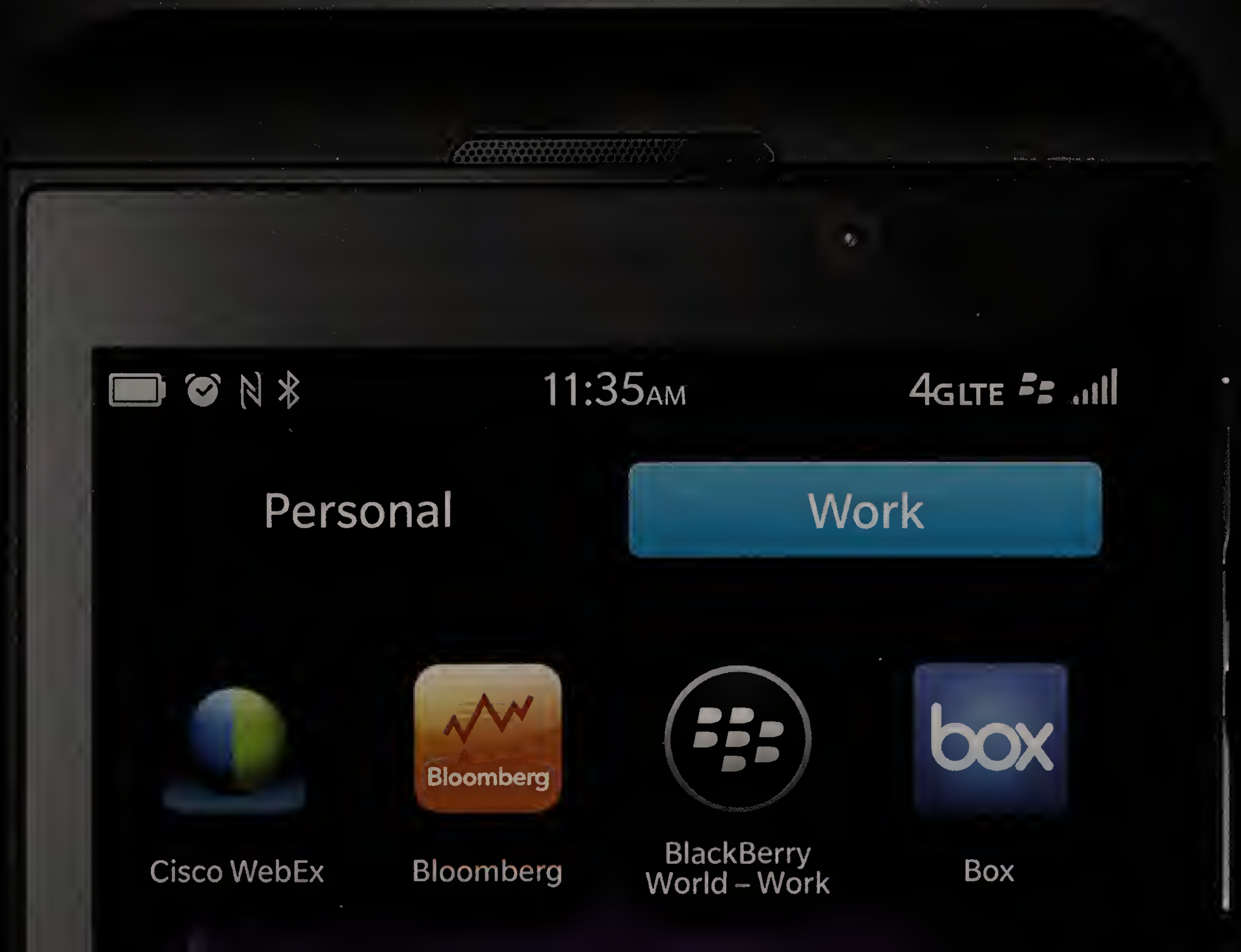

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